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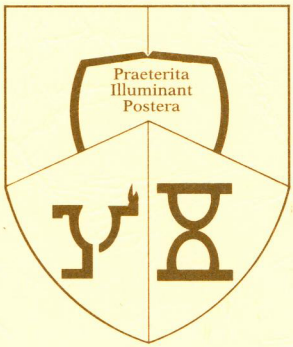

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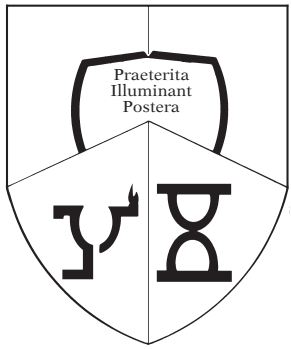

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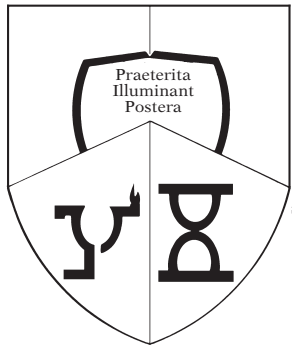

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ACCOUNTING HISTORIANS JOURNAL

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Volume 27, Number 1 **June 2000**

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ACCOUNTING HISTORIANS JOURNAL

Statement of Policy

The *Accounting Historians Journal* is an international journal that addresses the development of accounting thought and practice. *AHJ* embraces all subject matter related to accounting history, including but not limited to research that provides an historical perspective on contemporary accounting issues.

Authors may find the following guidelines helpful.

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2. Authors should describe the method employed in the research, indicating the extent and manner in which they intend to employ the methodology. Manuscripts are encouraged that draw on a variety of conceptual frameworks and techniques, including those used in other social sciences.

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5. In performing all analyses, authors should be sensitive to and take adequate account of the social, political, and economic contents of the time period examined and of other environmental factors.

6. While historians have long debated the ability to assign causation to particular factors, we encourage authors to address and evaluate the probable influences related to the problem or issue examined.

7. Authors should clearly state all their interpretations of results, and the conclusions they draw should be consistent with the original objectives of and data used in the study. Interpretations and conclusions should be clearly linked to the research problem. Authors also should state the implications of the study for future research.

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1. a maximum of 7,000 words

2. an abstract of approximately 100 words on a page that includes the article's title but no identification of the author(s)

3. a limited number of content footnotes which appear at the bottom of the appropriate page

4. a limited number of tables, figures, etc., appended at the conclusion of the text, but whose positioning in the narrative is indicated

5. References are to appear in brackets within the text. Specific page numbers are mandatory for all direct quotes but are optional otherwise.

6. a bibliography of all references cited in the text

Upon acceptance or an invitation to revise and resubmit, authors will be sent a style sheet which must be followed conscientiously for all subsequent revisions of the paper. Once the article is accepted, the editor will request the submission of a diskette prepared in Microsoft Word file format. If time permits, authors will be sent galley proofs. However, the inclusion of additional material will be severely limited.

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EXPLORING THE CONTENTS OF THE BALTIMORE AND OHIO RAILROAD ANNUAL REPORTS: 1827-1856

Abstract: In l995, a nearly complete collection of the annual reports of the earliest interstate and common carrier railroad in the U. S., the Baltimore and Ohio (B&O), was rediscovered in the archival collection at the Bruno Library of the University of Alabama. Dating from the company's inception in l827 to its acquisition by the Chessie System in l962, the reports present a unique opportunity for the exploration, study, and analysis of early U.S. corporate disclosure practice. This paper represents a study of the annual report information made publicly available by one of America's first railroads, and one of the first modern U.S. corporations.

In this paper, early annual reports of the B&O which detail its formation, construction, and operation are catalogued as to content and evaluated. Mandated in the corporate charter, the annual "statement of affairs" presented by the management and directors to stockholders is studied as a process and as a product that instigated the institutional corporate practice recognized today as "annual reporting." Using a single company methodology for assessment of reporting follows a pattern developed by Claire [1945] in his analysis of U.S. Steel and utilized by other researchers. This study demonstrates the use of archival information to improve understanding about the origins and contents of early annual reports and, therein, related disclosure forms.

INTRODUCTION

This paper is an original, descriptive, archival study which explores the development of reporting and disclosure practices in a dynamic economic and technological context.

Acknowledgments: We wish to acknowledge the valuable assistance of the editor and two anonymous referees and the comments of session participants at Academy of Accounting Historians research conferences in Atlanta (1998) and Toronto (1999).

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Accepted February 2000

The earliest annual reports of the Baltimore and Ohio Railroad (B&O) are catalogued and analyzed as to their content. These reports, from 1827 to 1856, cover the years of formation, construction, and early operations of a leading early American corporation. From the analysis of management's disclosure to outside investors, the evolution in a corporation's reporting is traced. The B&O's 1827 charter which mandated an annual "statement of affairs" be published represents a major historical root of today's practice of corporate annual reports.

HISTORICAL BACKGROUND

Aware of the need for transportation networks to move the new nation westward, George Washington was among the first to propose a national road that would stretch from the East Coast to a connecting point in the West. The high expenditure, in terms of time and money, of moving goods overland was a constraint to expansion and settlement. Existing transport was slow and expensive. Freight charges raised the cost of goods more than sixfold of the value of the merchandise being carried even relatively short distances overland. Washington died before the act passed Congress in 1806 to create the westward road. As such, the National Road was the first federally funded interstate highway, but in an age when five miles per hour was near to top speed [Snook, 1998, p. 1]. Elsewhere, corporations were chartered by states to build canals and toll roads as part of the transportation infrastructure to afford access to inland destinations. Many of these enterprises were doomed to failure when costs of construction greatly exceeded the limited capital. Ultimately, states took over some of these projects. The National Road (or Great National Pike), begun in 1815, extended due west 800 miles, connecting the eastern seaboard to Vandalia, Illinois near a river port and the portal of St. Louis. Building this westward road took 25 years, a generation of effort to reach the Mississippi from the East Coast starting point.

By the time of its completion in l840, this "road" had already begun to lose some of its significance as "rail roads" gained in importance for the migration west. Except for the National Road, waterways and canal systems had become the principal means of westward movement of goods and people. Linked to the National Road by the Cumberland Road, Baltimore was seen as a prime port for western commerce. But the opening of the Erie Canal on October 26, 1825 threatened Baltimore's commercial position with its cheaper waterborne

transportation linking the port of New York with the west via the Hudson River and Great Lakes. The Erie's success encouraged more canal efforts; the most direct threat to Baltimore was the Chesapeake and Ohio Canal, which began by following the Potomac and which would have made Washington, D.C. a seaport with the potential to supplant Baltimore. The merchants of Baltimore sought alternative transport technology to preserve Baltimore's preeminence as the country's third largest city, placing their support behind the potential of horse-drawn carts and cars moved along a fixed "rail road," leading west to the Ohio River. In this way, the B&O was proposed, promoted, and supported. Horse-drawn vehicles were the expected means of motive power; the steam locomotive would soon, however, transform and assure the B&O's future role.

The evolution of this transportation company, founded in Baltimore, and its progression into a major corporate organization have been studied with particular reference to its innovations in the technology of transportation. However, prior research has not undertaken an extensive assessment of the annual financial reporting archives of the B&O. This paper initiates that potentially significant dimension—the archival study of an early 19th century corporation's published annual reports prepared by the management and board of directors as a communication vehicle to a variety of constituent investor groups, the government, and the public [Fleischman and Tyson, 1998].

The B&O was a major innovator in American railway transportation. Not only a technology leader, the company created an organizational structure and developed new capital sources as well as refined disclosure and reporting processes. Its engineers experimented with various sources of power (horse, wind [sail], and steam); with configurations of wheels and tracks; and with the design of train engines, carriages, and freight cars. The company developed telegraphic communication systems and accomplished unprecedented engineering feats, including bridge and tunnel construction at a time when civil engineering was just developing as a profession to meet the challenge of railroad building. Management created an organizational structure, internal controls, relationships with political entities, and financing sources. These innovations, often publicized in its annual reports, provided examples for other railroads and led to the company's being identified as "B&O University" by aspiring careerists [Hungerford, 1928, Vol. 1, p. 112].

The B&O annual reports reflect the company's experimentation, evolution, and development in the process of disclosure

to capital providers, potential investors, and the public. As a pioneer corporate entity, the B&O's disclosure practices influenced other railroads, shaping expectations and methods to be employed by future industrial corporations. Previous research suggests the B&O was an important source of influence [Boockholdt, 1978; Giroux, 1997; Pollens, 1956; Vangermeersch, 1979]. The importance of company records in developing an understanding of 19th century enterprises has been studied by Edwards [1984] and others. The B&O became the first interstate common carrier of passengers and cargo and was a predecessor to other major trunk-line railroads, such as the Mobile & Ohio (1847), Pennsylvania (l847), Illinois Central (l851), Delaware & Lackawanna (l856), and the New York Central (1857). This research adapts a methodology employed in l945 by Claire to examine a single major company's changes in content, quantity, type, and quality of disclosure over an extended 30-year period [Claire, 1945]. The antebellum operations of the B&O, during the period of formation and development when the corporation sought to meet its objective of bridging the Alleghenies to connect with the Ohio, are studied herein as a distinct period, prior to the subsequent events during the American Civil War which severely impacted the B&O's operations and facilities. Mileages provided in Table 1 reflect the progress in building the railroad over the Allegheny Mountains during this period.

TABLE 1
B&O Construction Progress Mileage Timetable

Place Reached	Date	Miles from Baltimore
Frederick, MD	1831	61
Harpers Ferry, VA (WV)	1834	83
Washington, DC	1835	35
Cumberland, MD	1842	178
Piedmont, MD	1851	198
Grafton, VA (WV)	1852	265
Wheeling, VA (WV)	1853	379
Parkersburg, VA (WV)	1857	344

This paper is organized as follows. After this introductory section, a rationale for the B&O's corporate disclosure is addressed. This discussion relates to the examination of the B&O's corporate charter. Next, we consider use of a single company in a longitudinal study and the methodology employed. The contents of the B&O's annual reports from 1827 to 1856 are then described. Next, the developments in reporting are put

into context with the life-cycle development of the company. The paper then concludes with an assessment of the impact which the B&O had on corporate reporting practices of the era.

In the content analysis section, which represents the focus of the paper, a comparative measure of the extent of disclosure is developed to identify changes in the amount and type of information. Given the original and archival scope of this study, hypotheses are not specified. However, potential reasons for changes in the types of items included in the reports are explored to provide a hypothetical framework for future work.

RATIONALE FOR DISCLOSURE

From its inception in 1827, the B&O met the terms specified in its Maryland corporate charter that stockholders be issued an annual "Statement of Affairs." No mandates or standards were in place to provide specification on how to fulfill this obligation. The corporate charter, as a social contract, implied the duties of management and flowed from the powers that the state and the public bestowed on the B&O as a corporation. This meant endowing the company with an unlimited legal life and capital sourcing capacities that would lead to the popular development of corporate-based commerce [Nash, 1964].

As the first annual report states, it was "to the stockholders of the Baltimore and Ohio Railroad Company." Shareholders who provided the capital for the B&O were not managers of the enterprise. This separation is now common in corporate America as a modern business characteristic. Subsequently, a class of professional, salaried managers developed. This professional class had the expertise and skills needed to make the railroad efficient. Annual reporting became the communication medium for management to convey to the individual owners and public officials alike the performance, plans, and problems of the B&O. In the operation of this collective corporate property, the managers were accountable to the community of investors and, as such, were the stewards of the community's resources. The charter requirement for annual disclosure was a fundamental contract to discharge this agency and stewardship role. The importance of the B&O having ready access to capital to support its expansion westward meant it was also in its economic self-interest that dissemination be extensive, to reduce concerns about "information risks" by capital providers [Michael, 1996]. A willingness to be forthcoming was economi-

cally rational in order to minimize the cost of capital and to instill confidence in management actions. How extensively and rapidly these practices would develop to include details useful to proprietary capitalists and government officials who underwrote the venture is one aspect which is important to this study.

THE CORPORATE CHARTER: A PUBLIC-PRIVATE ENTITY

The B&O was a private, "for profit" business, but also a public entity reliant upon a state charter, public capital, and an implied governmental relationship. In this way, it was quasi-public. First, the B&O's formation was viewed as a "community enterprise" since almost every citizen of Baltimore purchased a share of stock [Jacobs, 1995, p. 13]. Second, preserving and enhancing the City of Baltimore's commercial position via trade with the west was the reason for the B&O's existence and the reason that people invested in its stock. Nowhere were profits or dividends mentioned as a reason for forming the company. At the B&O's dedication ceremony, a scroll was placed in a hole drilled inside the foundation stone. It read:

> The stone is deposited in commemoration of the commencement of the Baltimore and Ohio Railroad, a work of deep and vital interest to the American people. Its accomplishments will confer the most important benefits upon this nation by facilitating its commerce, diffusing and extending its social intercourse, and perpetuating the happy union of these confederated states [Jacobs, 1995, p. 5].

In the early 1800s, corporate forms of business were not commonplace; proprietary and partnership forms were the norm. Each corporate charter required an act of a state legislature. The B&O was chartered in Maryland (February 18, 1827), Virginia (March 8, 1827), and Pennsylvania (February 22, 1828). It would be at least a half-century before John D. Rockefeller successfully employed the "trust" as a device to manage multiple-state chartered enterprises to achieve a single national corporate form. From the outset, many of the political and economic challenges faced by the B&O would relate to the interstate character of its developing business and the relationships with each state in which it was chartered to operate as a corporation.

The public nature of the B&O was also related to its economic objective—to increase the well-being and wealth of the

City of Baltimore and to secure its place on the seaboard as a leading port city for trade and commerce to the west. New York (with its Hudson River and Erie Canal), Boston, Philadelphia, Richmond, Charleston, Savannah, Mobile, and New Orleans were all rivals for the western trade, and each had or sought connections with the Great Lakes and the Ohio and Mississippi Rivers.

The B&O's Maryland charter allocated half of the authorized shares to governmental entities. It specified that the company was to start with $3,000,000 of capital (30,000 shares of $100 stock). The City of Baltimore initially underwrote 5,000 shares and the State of Maryland 10,000 shares. Table 2 compares the government ownership to individual ownership at the B&O's inception and a quarter-century later when the Ohio had been reached.

TABLE 2
B&O Stock Ownership
1827 and 1853

1827

	# of Shares	% of Shares	$ of Capital*
State of Maryland	10,000	33%	$1,000,000
City of Baltimore	5,000	17	500,000
Individuals	15,000	50	1,500,000
Total	30,000	100%	$3,000,000

*Note: These shares were the numbers subscribed. The charter required investors to pay $1 upon subscription and the remainder in annual installments of an amount not to exceed one-third the unpaid amount.

1853

Common Stock	# of Shares	% of Shares	$ of Capital*
State of Maryland	6,855	5.2%	$685,500
City of Baltimore	42,582	32.5	4,258,200
City of Wheeling	5,000	3.8	500,000
Individuals	46,478	35.4	4,647,800
Script (not funded) [Subscribed] Stock	274.02	.2	27,402
Preferred Stock—"held by the State of Maryland on which a dividend in perpetuity of 6 per cent per annum (not more, not less) out of profits of the Road, is guaranteed by the Company to the State."	30,000	22.9	3,000,000
Total	131,189.02	100 %	$13,118,902

The Maryland legislature also retained rate-setting authority as part of the exchange for the unique power granted to the railroad. Being major suppliers of capital, the State of Maryland and the City of Baltimore had a "proprietary" as well as a "political" reason to take all the necessary steps to see that the B&O succeeded. Another public-private economic element was the charter provision whereby Maryland granted the B&O a tax exemption. These processes, including "election" of the board of directors, the annual meeting, and the stewardship aspect of required annual disclosure of company business, were also consistent with a public participative style of relationship between government and its citizens.

Another public dimension of the B&O involved the technical services it received from the federal government, which supplied topography specialists from the U.S. Army to survey and lay out the railroad's route. The federal government did not provide direct financial support, however, and declined to invest or lend the B&O money when the company was in financial difficulty. Congressional support for land-grant funding of railroad development would grow later in the century when southern, western, and agricultural groups influenced legislation.

Private landowners also participated in the B&O's development. The right of way for the railroad was obtained free of charge from those willing to accept the potential appreciated value of their surrounding tracts as part of the economic payment.

The advent of the B&O as an unprecedented element in the economic development of a city, state, region, and nation presented an equally unprecedented need for information about its operations and for performance measurement techniques to guide both management and those with capital at risk. This archival study seeks to achieve a better understanding of the content and context addressed by this set of initial reports.

SINGLE-COMPANY CONTENT ANALYSIS: A MODEL FOR MEASURING PROGRESS

Writing in l945, Claire [1945, p. 40] observed:

> One approach to the measurement of reporting progress would be to survey the changes in the annual reporting style of a single company, especially one which has a long history in the field of presenting annual reports, has shown an interest in presenting them

> in a rather full and complete manner, and has displayed a desire to increase their effectiveness and attractiveness.

He continued by identifying the U. S. Steel Corporation, the first billion-dollar American public company, as a 20th century corporation possessing the requisite qualities for such a survey to measure progress in business reporting. Other researchers such as Levenstein [1992], McKinstry [1996], Napier [1995], Nikitin [1990], Reed [1989], Spraakman [1999], Stone [1984], Vollmers [1993, 1997, 1999], and Williams [1999] have also employed a single or limited company methodology to examine changes over time for a variety of companies and a variety of accounting issues. Employing Claire's single-company model to the reports of the B&O to determine the changes in corporate disclosure and reporting for the first half of the 19th century seems as appropriate as using U.S. Steel for a comparable period of the 20th. The unique attributes of each company in its respective period and industry, as well as the duration of each company's importance in its respective industry and the economy as a whole, are comparable. As the initial step in a process of employing a single company as a surrogate measure for early 19th century disclosure development, the published company reports stipulated under the B&O corporate charter are measured in terms of fundamental attributes such as length, size, and content of said reports.

Table 3, "Reports to Stockholders," begins the study, providing a display of the length in pages of each annual report and the number of exhibits and tables in each. As shown in these data, the reports increased in pages and tables over the 30-year period. Several of the very large reports in the earliest years are identified with special management studies presented to the board of directors, which in turn were included within the annual report. Table 3 suggests that a relationship existed between the annual report's length and the leader of the management, in this case the president. A change in the person holding this office is also consistent with noticeable changes in the size, format, and contents of the report. For example, Louis McLane's appointment in the mid-1830s is reflected by a reduction in the annual report, including fewer special reports by officers to the board. This initial reduction in size was short-lived, however, because under McLane's administration the reports were expanded to include discussions of operations by both the chief of transportation and the chief engineer. These

discussions became standard content for the B&O and for other railroads as well, such as the Louisville & Nashville Railroad (1861) and the Illinois Central Railroad (1856).

TABLE 3
Reports to Stockholders*

Year	Report Number	President	Page Length	Number of Exhibits and Tables
1827	1	Thomas	5	0*
1828	2	Thomas	55	1
1829	3	Thomas	105	12
1830	4	Thomas	153	15
1831	5	Thomas	135	19
1832	6	Thomas	136	19
1833	7	Thomas	193	16
1834	8	Thomas	57	13
1835	9	Thomas	108	33
1836	10	Patterson**	92	15
1837	11	McLane	29	2
1838	12	McLane	21	4
1839	13	McLane	16	3
1840	14	McLane	17	4
1841	15	McLane	24	4
1842	16	McLane	30	6
1843	17	McLane	18	6
1844	18	McLane	75	13
1845	19	Jones***	28	6
1846	20	McLane	30	6
1847	21	McLane	68	13
1848	22	McLane	55	17
1849	23	Swann	58	18
1850	24	Swann	63	17
1851	25	Swann	68	17
1852	26	Swann	96	17
1853	27	Harrison	58	23
1854	28	Harrison	95	41
1855	29	Brooks	91	33
1856	30	Brooks	115	33
1857	31	Brooks	155	39
1858	32	Brooks	159	41

*refers to Statement of Affairs
**Joseph W. Patterson served as "temporary" president.
***Jones served as "interim" president and signed the 1845 report while McLane was in England raising capital and studying British railways.

McLane's predecessor, Philip Thomas, initiated the publishing of manager reports in the second (1828) annual report. McLane, however, made it a continuous practice to provide

such reports. These first two permanent presidents of the B&O were "money men" with skills and understanding to raise the needed capital. Thomas was a banker, president of the Mechanics Bank of Baltimore, when he organized the B&O. McLane was the Secretary of the U.S. Treasury Department prior to being elected to the presidency of the B&O. It probably was not a coincidence that the first two presidents had banking and finance backgrounds, given that the major role of both was raising capital for the B&O. Indeed, McLane made two lengthy trips to England to raise money to finance construction during this term. Their knowledge of banking and financing may have made Thomas and McLane sensitive to the investors' information needs. This may have set the B&O's disclosure practice firmly in place for subsequent presidents who had skills other than finance.

Documentation marked Table 4 (A), (B), and (C) represents a detailed and comprehensive spreadsheet basis for a "Content Analysis of Reports." These exhibits identify the categories/types of information disclosed to stockholders in three phases of the 30-year period of study. Table 4 (A) relates to the period of initial construction (1827-1831) and the first year of steam locomotive operations (1832). These reports are focused on disclosing information about the "development" of the company's capacity. Table 4 (B) identifies a stage of report evolution that focuses on initial operating, revenue, and cost information from 1833 to 1836, at a time when the main road was open as far as Harper's Ferry and the branch road to Washington, D.C. had been completed. Table 4 (C) chronologically relates the expansion of disclosure employed in the annual report as the company matured into full-scale and continuous operation (1837-1856). These exhibits identify a particular table or report information and its timing. More often than not, once a type of information had been disclosed, it was continued, with the particulars of the report becoming ever more detailed and elaborate with the passage of time.

From Table 4, the growth in the volume of detail disclosed can be appreciated; also, the scope of activity described by the reporting can be traced across time. A prominent feature identified is the multiple-column, multiple-row, tabular format utilized frequently in these reports. This level of detail and categorization reflects the emphasis that B&O management placed on such information for decision making and control. For the first time, a business enterprise needed, collected, and used such accounting and statistical data to manage its enterprise and

TABLE 4 (A)
Content Analysis of B&O Annual Reports
Years 1827-1832: Experimental Years
Table Contents and Size

1828	**Columns x Rows**
Construction Report	7 x 22
1829	
Alternative Route Comparison	3 x 4
Aggregate Construction Cost	14
Budgeted Cost for Next Year	16
Subdivision Location	3 x 32
Comparative Statistics on Alternative Routes	8 x 10
Courses and Distances	3 x 25
Cost of Construction—Incurred and Estimated—Division I	11 x 27
Cost of Construction—Incurred and Estimated—Division II	11 x 27
Materials Contracted	8 x 15
Construction Contracts	8 x 135
Synopsis of Grading Completed	7 x 64
Synopsis of Masonry Completed	6 x 44
1830	
Budgeted Cost for Next Year	24
Cost Estimate of per Mile of Track	18
Cost Estimate of Iron Rail per Mile	12
Cost Estimate of Second Section of Track	15
Cost of Track Estimation	13
Cost of Contracted Work—per Mile	11
Cost of Masonry	4
Station to Station Distances and Grades—Division I	3 x 12
Station to Station Distances and Grades—Division II	3 x 34
Quantities of Excavation and Embankment	6 x 38
Amounts Expended	5
Bridge Expenditures	9
Estimated Cost of Construction	66
Canal—Railway Cost Assessment	2 x 21
Canal—Railway Cost Alternatives	40
1831	
Quantities of Excavation and Embankment	6 x 31
Estimated and Actual Cost to Finish Sections	33
Cost of First 13 Miles of Track by Section—Division I	4 x 1
Length, Poles, Miles—Division II	7 x 27
Length, Rods, Miles—Division III	5 x 42
Length, Poles, Miles—Division IV	3 x 27
Distance and Cost of Construction by Division	8 x 8
Aggregated Costs	1 x 25
Lengths of Sections—Division V	3 x 16
Lateral Road Statistics	3 x 5
Cost of Damages due to Riot (Workers Protest)	24
Cubic Yards Excavated	3 x 22
Elevation and Descent of Track in Feet	21

TABLE 4 (A) (continued)

	Columns x Rows
Recapitulation of Elevation and Descent	7
Distances and Elevation	4 x 10
Masonry Budget	6
Quantity of Excavation and Embankment by Division	8 x 22
Revenue from Passengers by Station by Month	10 x 10
Expenses of Transportation by Category by Month	7 x 10
1832	
Revenue from Passengers by Station by Month	12 x 13
Cost of Construction	9
Daily Cost of Running by Steam Engine	8
Washington Branch Construction Cost	8
Bridge and Viaduct Construction Cost	35
Gradation and Masonry Average Cost per Mile	6 x 8
Expenditures to Date—Masonry and Gradation	6
Rail Laying Costs	50
Disbursements for Construction Costs	35
Expenditures and Repairs of Railroad Cars	5
Comparison of Cost of Shipping Freight—Train vs. Wagon	8
Cost of Power: Horse vs. Steam	9
Revenue from Freight Transported East, West by Month	6 x 13
Monthly Comparison of Passenger and Freight Revenue	6 x 13
Expense—Monthly by Category	5 x 13
Revenue, Expense and Net Revenue by Passenger or Freight Activity by Month	9 x 13
Six Month Revenue, Expense and Net Revenue	9 x 7
Cash Receipts and Disbursements	27

TABLE 4 (B)
Content Analysis of B&O Annual Reports
Years 1833-1836: Commencement of Operations
Table Content and Size (Number of Columns x Rows)

Tables	1833	1834	1835	1836
Revenue from Passenger by Station by Month	10 x 13	10 x 13		11 x 13
Revenue from Freight—East-West by Month	6 x 13	6 x 13	6 x 13	7 x 13
Revenue from Passenger and Freight by Month	5 x 13	5 x 13	5 x 13	5 x 13
Expense by Category	3 x 13	3 x 8	7	4
Receipts and Expenditures	11	8	8	3 x 6
Cash Receipts and Disbursements	21	34	29	23
Six Month Profit—by Month	1 x 7		86 pages	
Six Month Receipts and Expenditures	2 x 2			
Six Month Revenue Comparison	3 x 7			
Engines and Cars	1 x 15			
Expenditure for Railroad Cars	1 x 6		4	
Probable Costs of Five Route Alternatives	1 x 600			

TABLE 4 (B) (continued)

Tables	1833	1834	1835	1836
Cost Comparison of Two Routes	1 x 12			
Estimate of Annual Repair Costs	1 x 35			
Table of Contracts (Construction)	6 x 8		7 x 13	
Masonry Costs on Washington Branch	9 x 8		11 x 39	
Knight's Study	3,600		86 pages	
Washington Branch—Cash Receipts & Disbursements		16	21	4 x 10
Cost per Train per Day		6		
Coach Usage—Miles		9		
Revenues—Expense Two Years Compared		3 x 3		
Distances and Elevations from Cumberland			4 x 24	
River Elevation			4	
Distances and Descents of Creeks			58	
Cost per Mile Comparison to Other Railways				2 x 6
Locomotive Performance Comparison				11 x 12
Actual Locomotive Engine Performance				12 x 14
Summary of Affairs			22	53
Abstract of Monthly Tonnage of Freight Shipment				8 x 13
Statement of Monthly Revenues—Washington Branch				5 x 13
Statement of Expenses—Washington Branch				4

TABLE 4 (C)
Content Analysis of B&O Annual Reports
Developmental Stage: 1837-1856

Description of Content	Year(s)
Summary Statement of Affairs	1837 – 1841 ••
Receipts and Expenditures	1837
Revenues and Expenses	1838 – 1856 •
Statement of Affairs—Washington Branch	1838 –1839
Revenues & Expenses—Washington Branch	1838 – 1856 •
Balance Sheet	1840 –1856 •
Balance Sheet—Washington Branch	1840 – 1856 •
Passenger & Freight Tonnage Comparison 2 years	1842
Passenger & Freight Tonnage Comparison 2 years—Washington Branch	1842
Operations	1843 – 1844
Operations—Washington Branch	1843 – 1844
Cost of Coal Hauling	1844
Estimated Coal Revenues	1844
Revised Estimation with Coal Car Improvement	1844
Rate Increase Projection of Revenue	1844
Retained "Nett"	1849 – 1856 ••
Retained "Nett"—Washington Branch	1849 – 1856 ••

TABLE 4 (C) (continued)

Description of Content	Year(s)
Comparative Operation Summary—10 years	1845 – 1847
Details of Operation	1845 – 1849 ••
Details of Operation—Washington Branch	1847 – 1852 ••
Passengers by Station	1848 – 1856 ••
Abstract of Commodities—Transported Westwardly	1848 – 1856 ••
Abstract of Commodities—Transported Eastwardly	1847 – 1856 ••
Expenses—Passenger and Freight	1847 – 1848
Trade Revenue, Expense, Profit and Dividend—Yearly Comparison	1847 – 1852 ••
Comparison with Leading Railroads	1847 – 1853 ••
Cost of Repair—by Type of Track	1847 – 1848
Wage Analysis—2 Year Comparison	1847 – 1852 ••
Two Year Comparison of Monthly Revenues Expenses & Trade	1847 – 1852 ••
Locomotive Listing	1848 – 1856 ••
Burden Car Listing	1848 – 1856 ••
Passenger Car Listing	1848 – 1849
Performance—Miles Run	1849 – 1856 ••
Coal Report	1853 – 1856
Siding Statistics	1853 – 1856
Siding Recapitulation	1853 – 1855
Washington Branch Sidings	1853 – 1856
Recapitulation of Main & Second Track	1853 – 1855
Cost per Mile for Labor of Maintenance	1853 – 1854
Miles of String Changed to Crosstie	1853 – 1855
Cost of Repair by Month	1853 – 1855
Value and Condition of Locomotives	1853 – 1854
Value and Number of Freight Cars	1853
Value and Number of Passenger Cars	1853
Amount Spent on Each Water Station	1854 – 1856
Revenues by Month—Passenger & Tonnage	1854 – 1856
Livestock Shipment Report	1854 – 1856
Flour Shipment Report	1854 – 1856
Wheeling to Baltimore Freight Report	1854 – 1855
Expenses of Main Line	1854 – 1856
Fuel (Coal & Wood) Inventory	1854 – 1856
Abstract of Package Shipment	1856
Abstract of Commodity Shipment	1856
Expenses of Washington Branch	1854 – 1856
Cars Transported to Baltimore	1856
Number & Condition of Bridges	1856
Comparative Cost of Repair of Track, Bridges, Waterstation and Depot	1854 – 1856
Subdivision Lengths	1854 – 1855
Gradation Expenditures	1854 – 1856
Expenditures on Each Bridge—Labor & Materials	1854 – 1856
Details of Cost of Ellysville Bridge	1854
Details of Cost of Monocracy Bridge	1854
Waterstations Costs	1854 – 1855

TABLE 4 (C) (continued)

Description of Content	Year(s)
Mount Claire Engine House Costs	1854
Martinsburg Engine House Costs	1854
Cumberland Engine House Costs	1854
Amount Spent on Each Depot	1855 – 1856
Comparative Statement of Expenses of Maintaining Rolling Stock	1854
Comparative Statement of Expenses of Maintaining Rolling Stock—-Washington Branch	1854
Comparative Costs of Machinery Dept.	1856
Machinery Dept. Inventory of Materials & Tools on Hand	1856
Monthly Expenses of Machinery Dept.	1856

•Indicates ten years or more
••Indicates five years or more

operate the business. Beyond the stratification and combination of the data in innovative ways to produce useful information, the B&O experienced a high volume of transactions that heretofore had not been encountered, even by the largest trading or manufacturing firms of the day. Finally, the table communicates the fact that railroad operations, complex, multitasked, and far-flung as they were, required close coordination and control to operate in a safe, timely, and efficient manner. This required the data to be gathered and processed quickly and reported to operating managers, in turn causing railroads to employ more accountants and auditors before the Civil War than were employed by the federal and state governments altogether [Chandler, 1977, p. 110]. The training of accountants by railroads would be an important factor in the subsequent industrial revolution and the rise of the accounting profession.

As can be determined from Table 4 (A), the first reports are oriented toward information about the construction of the railroad. Detailed descriptions of surveys of routes and alternatives are given, even though it might be a decade before the rail line was actually built in these places. Technological developments and innovations are also described in these early reports, with full engineering details. Detailed disclosures of plans and progress were necessary to keep shareholders informed and, hopefully, enthusiastic, especially since construction was slower than predicted during the early, optimistic stages of company promotion. Revenues would begin in the fourth year. Comparisons of alternatives were closely documented such that

readers could follow the company's progress. The construction was celebrated at important points. Charles Carroll of Carrollton (at the age of 92 and the sole surviving signer of the Declaration of Independence) presided at the inauguration of the B&O, a ceremony for the laying of the "First Stone," July 4, 1828 [Previts and Merino, 1998, p. 62]. This portion of the road, from Baltimore to Ellicott's Mill, would be 13 miles of double-track line. Carroll, a director of the road, said: "I consider this among the most important acts of my life, second only to my signing the Declaration of Independence, if even it be second to that" [Jacobs, 1995, p. 14]. Carroll's insight into the future was clearer than President John Quincy Adams', who was in Washington, D.C. that day celebrating the commencement of the rival C&O Canal, because he thought that railroads would fail and that canals would be the main transportation means [Jacobs, 1995, p. 14].

As reflected by the listing in Table 4 (A), the first years' reports focused on construction costs and cost measures and comparisons. After the initial enthusiasm of founding the company, cost overruns occurred, and criticism centered on bridge construction and large expenditure amounts that could be labeled as part of an "experiment." A cost disclosure focus, consistent with stewardship, became an institutional feature of the reports throughout this 30-year period. The managers recognized that shareholder support required that investors appreciate that the company was prudently employing scarce investment resources. Disclosure of information about construction and operating costs was needed to maintain investor confidence in management and to address concerns, such as those which led to the appointment of William Woodville in 1830 to control disbursements for construction [B&O, Minute Books, 1830].

BUSINESS LIFE CYCLE AND REPORTING

These initial annual reports, 1827-1856, characterize the developmental stage in the company's life cycle. The first report (1827) contains a president's letter to shareholders, describing company plans and emphasizing that the company has just been organized; it contains prose describing the company but no quantitative measures. The second report (1828) again focuses on a description of plans, this time more concrete and complete since initial surveys of routes had commenced. Also, the president's letter in the second annual report discusses the

need to raise capital. This report includes not only the president's letter but reports from the company's board of engineers describing the proposed route and introducing a "departmental commentary." Here also appears the first table with figures, giving distances, furnishing engineering data relating to excavation (in quantity of cubic yards of earth), and describing bridges constructed for the first seven miles of track. No dollar amounts are provided, only physical measurements.

In the third report (1829), dollar amounts are included, so that cost as a measure of progress is introduced as a subject of reporting. Construction cost overruns (along with the capital raised and the distances traversed) are featured items in the president's letter to shareholders. Costs are also a focus throughout the board of engineers' reports, which detail expenses, along with physical measures, locations, and activities. The information reported includes the actual amount spent, along with the estimated capital needed to complete various parts of construction. Costs per quantity (per yard, per "pole") are used as statistical measures of expenditures and construction contracts. Cost projections and budgets were also used, as well as cost-per-mile ($20,000 per mile) estimates for a section of track. The third annual report concludes with two extensive tables detailing construction contracts and the arrangements for compensation, in cents per yard, for excavation.

The next stage of development in the reports is distinguished by the receipt of revenues. This is mentioned in the president's 1830 report, almost as an anecdote, because full operations were not yet underway and the focus was still upon construction and testing of equipment. One such test included a competition between steam power and "horse" power. The *Tom Thumb*, believed to be the first steam locomotive built and operated in the U. S., raced a horse-drawn coach over the B&O's first stretch of double track on August 28, l830. The horse won, but the event publicized the debut of steam engine technology. The B&O would increasingly employ steam engines in the next stage of its operation.

The 1831 annual report introduces tables reporting railroad revenues and expenses. These two tables appear to be supplemental to the disclosures about construction, which continued as a major emphasis. Now the public was becoming involved as passengers, for riding the railroad as an excursion was popular, much as a trip to Disney World is today. The 1831 revenue solely from passengers reflected this novelty. By the following year, the route was sufficiently developed to attract freight, a

strategic service objective of B&O operations. In the 1831 annual report, information about revenue was developed by month and by station boarded, and expenses were measured by month and by category of expenditure.

Revenues and expenses were first "netted" (today we might say "matched") in an attempt to measure the outcome of operations in 1832 when the emphasis placed on operations became equal to that given to construction. Significantly, revenues were broken down into passenger and freight sources. Further analysis was done on each source; passenger and freight statistics were kept by month. Within a few years, revenues would be categorized by type of commodity (east and west shipped and by station boarded or shipped from and to). Expenses were also collected by month. Expenses were not only categorized but also allocated to passenger revenue and to freight revenue, such that profitability ("net revenue") of each activity was measured. These "breakouts" are similar to reports on segments and cost allocation.

The 1832 report contains several new elements. A six-month "interim" report is included (see Table 5) as is a cash receipts and disbursements statement. This information was perhaps a response to liquidity concerns. Cash shortages plagued the company (see Table 6). During this period, "net revenue" (operating income) reports were employed. These appeared several years before a proto-balance sheet and suggests that profitability was most important. However, in the 1832 annual report the treasurer did include a listing of the real estate owned by the B&O, a step toward the development of a balance sheet (see Table 7).

TABLE 5
1832 Interim Income
(6 months)

(M. No. 6.)

A detailed Statement of the Receipts, Expenses, and Net Revenue of Transportation, on the Baltimore and Ohio Rail Road, from the 1st of April to the 30th September, 1832.

	PASSENGER			TONNAGE			TONNAGE		
	Receipts	Expenses	Net Revenue	Receipts	Expenses	Net Revenue	Receipts	Expenses	Net Revenue
April,	7,049.73	2,885.32	4,164.41	7,949.04	3,666.86	4,282.18	14,998.77	6,552.18	8,456.59
May,	8,240.25	2,949.—	5,291.25	8,243.14	3,394.40	4,848.65	16,483.39	6,343.49	10,139.90
June,	8,661.29	3,019.—	5,642.29	5,887.36	3,025.55	2,861.81	14,548.65	6,044.55	8,504.10
July,	8,614.39	3,085.55	5,578.84	5,393.67	3,062.39	2,331.28	14,008.06	6,097.94	7,900.12
August,	8,691.23	3,054.08	5,637.15	7,377.23	3,433.39	3,943.84	16,068.46	6,487.17	9,580.99
September,	5,554.53	3,068.32	2,486.21	9,340.82	3,692.19	5,648.63	14,895.35	6,760.51	8,134.84
Totals	46,811.42	18,011.27	28,800.15	44,191.26	20,274.87	23,916.39	91,002.68	38,286.14	52,716.54

TABLE 6
1832 Annual Report Exhibits of Cash Disbursements ["N. No. 1"], Cash Receipts ["N. No. 2"] and Cash Account Activity ["N. No. 3"]

[N. No. 1.]

An exhibit of the entire disbursements of the company from its first organization to the present time:

Expenses incurred in obtaining the charter, and in the organization of the company, and expenses of various committees since,		$ 5,446.28
Mission to England, and salaries of the board of engineers,		21,160.95
Salary of the Chief Engineers, since the new organization of the officers,		5,250.00
Office expenses, including stationary, postages, printing, advertising, etc.		10,346.44
Surveys for the lateral branch road to Washington,	$ 16,650.00	
Interest,	38,390.85	
Law expenses, fees of counsel and chancery expenses,	24,158.94	
Preliminary surveys of the various routes previous to the location of the roads, including instruments, estimated at	24,000.00	
Expenses of final surveys and location, including instruments,		103,199.79 16,648.26
Construction of a bridge for the accommodation of the Washington road over the railway,		3,534.98
Expenditures by the department of graduation and masonry,	1,193,744.79	
Expenditures by department of construction, including materials to the value of above $36,000 remaining on hand,	822,055.14	
Expenditures by other departments on account of graduation and masonry, and expenses incurred in obtaining right of way for road bed, damages paid to landholders, salaries to other officers than engineers, and including small unexpended balances now remaining in the hands of the disbursing officers,	56,363.89	
		2,072,163.82
Contingencies,		1,525.97
Expenditures on account of moving-power; including carriages, wagons, steam engines, horses, etc.	184,634.22	

TABLE 6 (continued)

Construction of depots, including purchase of property, building, stables, etc.	83,445.87	
		268,080.09
		$2,507,356.58

NOTE. Of the above expenditures, it will be perceived that the sum of $268,080.00 has been disbursed in the acquisition and improvement of real property and in the procurement of machinery and moving power, besides $16,650 paid on account of surveys for the Washington Rail Road, $24,000 paid for preliminary surveys required over a great district of country for the ascertainment of the best practicable route for the final location of the road, $38,390.85 paid for interest on loans obtained in anticipation of the installments, and $24,158.04 paid for law expenses, leaving the sum of $2,136,076.70 for the construction of the road and all the various expenses incident tot he organization and operations of the company up to this period. At the same time, it may be remarked, that the real estate, machinery and moving power, owned by the company is now fully worth the cost at which it stands charged.

[N. No. 2.]

Statement of the receipts from Transportation and of the amount of dividends paid

Amount received from the Transportation of passengers and tonnage, up to the 1st October, 1832,		$183,053.21
Amount paid for dividends declared,	$69,075.00	
Expenses of Transportation,	98,653.01	167,728.01
Balance on hand in favor of Transportation account,		$15,325.20

[N. No. 3.]

The Baltimore and Ohio Rail Road Company, In account with George Brown, Treasurer, Cr.		
By cash received on 39,900 shares upon which $55 per share has been paid,	$2,194.500	
Cash received, on 100 shares paid up in full $100 per share,	10.000	
Cash received, on loan from the Bank of the United States,	200.000	
Cash received, on loan from the Mechanic's Bank of Baltimore,	100.00	
Balance on hand from Transportation account,	15.325.20	
		$2,519,825.20
To amount of disbursements from the organization of the company the 1st October, 1832, per Statement, N. No. 1.	2,507,356.58	
Balance at the Cr. of the Company,	12,468.62	
		$2,519,825.20

Baltimore, October 1st, 1832

GEORGE BROWN, *Treasurer*,
Of the Baltimore and Ohio Rail Road Company.

TABLE 7
An Inventory Listing of Assets from the 1832 Annual Report
A Preliminary Balance Sheet

[N. No. 4.]

List, and description, of the real estate acquired, and now held by the Baltimore and Ohio Rail Road Company.

1. Two entire squares of ground, containing nearly three acres and a half, situated at the eastern termination of the rail road on the City Block, bounded by Exeter, Lancaster, Fleet and Canal streets, and divided by Alice Anna street; fronting on these several streets two thousand two-hundred and twelve feet, of which front, two hundred and fifty-seven feet lies on the city dock, affording a direct communication between the railway and the shipping in the harbour. This property was a donation to the company from the corporation of the city of Baltimore and was conveyed by deed, bearing date the 22d day of June, 1832, recorded in Baltimore county.

2. Three parcels or lots of ground situated on Pratt and Charles streets, in the city of Baltimore, near to Light street wharf; conveyed by John White, trustee, and William Patterson, by deed bearing date the 29th day of July, 1831, recorded in Baltimore county.

3. Four undivided fifth parts of a lot of ground on Pratt street, and of a lot adjoining thereto, conveyed by William Gwynn and others, trustees, by deed bearing date the 6th day of July, 1831, recorded in Baltimore county.

4. A lot of ground at the intersection of Charles and Camden streets, adjoining the last mentioned lots, assigned by Robert Miller, by indenture bearing date the 6th day of June, 1831, recorded in Baltimore county.

N.B. On the above described pieces of ground situated between Light, Pratt, Charles and Camden streets, there are erected six commodious warehouses, now partly occupied as the principal depot of the company in the city of Baltimore.

5. A lot of ground containing nearly ten acres of land, situated near the intersection Pratt street and the Washington turnpike road, bounded on three of its outlines by James, Stockholm and Republican streets, being now used as a depot, and is the point at which the locomotive engines of the company arrive and depart. There is erected upon this lot, an extensive house for the protection of the carriages, a weighing house, offices for the forwarding agents of the company, work shops, and other conveniences and fixtures. This property was a donation to the company, from James Carroll, Esq., and was conveyed by deed, bearing date the 1st day of December, 1830, recorded in Baltimore county.

6. A lot of land situated on the tenth section of the first division of the rail road immediately at its intersection with the Washington turnpike road, about six miles from Baltimore, conveyed by Joshua and Harriet Trimble, by deed, bearing date the 11th day of June, 1830, recorded in Baltimore county.

7. A lot of ground situated at the first intersection of the rail road with the Frederick turnpike road at Ellicotts' Mills, binding on that turnpike two hundred and twenty-nine feet, and containing about one acre of land, upon which is erected a substantial and appropriate warehouse and necessary offices for the accommodation of the trade at that depot.

This property was a donation from George, Samuel, Andrew and John Ellicott, and was conveyed by deed bearing date the 2d day of December, 1830, recorded in Anne Arundel County.

TABLE 7 (continued)

8. A parcel of land containing about five and one-third acres at the commencement of inclined plane number one, extending one hundred and fifty feet on each side of the centre of the rail road, and running parallel therewith seven hundred and sixty-eight feet. This land is intended for additional rail tracks, turnouts, and buildings necessary at the foot of that plane. The title was acquired by the inquisition of a jury, whose verdict is recorded in Baltimore county.

9. A parcel of land containing about two and a half acres extending three hundred and fifty-eight feet in length by three hundred feet in width, at the head of plane number one. This ground is intended for the accommodation of a stationary engine and other fixtures. The title to it, was acquired in the same manner as to the preceding lot, and the verdict is lodged for record in Baltimore county.

N.B. Objections have been filed to the ratification of the last mentioned verdict, which are now *sub judice*.

10. A tract of land containing eight and a half acres, on the summit of Parr's Ridge, extending one hundred and eighty-three feet on each side of the centre of the rail road for a distance along and parallel therewith seven hundred and eighty-seven feet, and thence continuing to the south side thereof only, the further distance of one thousand feet. The title to this land was acquired in the same manner as the two preceding tracts, and the verdict is recorded in Frederick county.

This piece of land is intended for the accommodation of the stationary engines and their necessary appendages to be erected at that place, for working of planes number two and three. The extension of the line one thousand feet on the south side further than on the north side of the road, was for the purpose of securing a spring required to afford the necessary supply of water for the engines.

11. A tract of land at the head of incline lane number four, containing between seven and eight acres, intended for the accommodation of a stationary engine. This tract is, in length, nine hundred feet, and in width one hundred and fifty feet, on each side of the centre of the rail road, excepting for a short distance on the south side, where the width was enlarged to take in a spring necessary to afford a supply of water for the engines.-The title was acquired in the same manner as the preceding, and the verdict is recorded in Frederick county.

12. A tract of five and a half acres at the foot of inclined plane number four, extending in length eight hundred feet, and one hundred and fifty feet in width, on each side of the centre of the road. This land is intended for similar purposes, as that owned by the company, at the foot of incline plane number one. The title was acquired in the same manner, and the verdict is recorded in Frederick county.

13. A lot of ground containing six acres, situated in the city of Frederick, upon which, the company are now erecting a substantial and commodious warehouse and offices for the accommodation of the depot established at that place, as also the requisite car houses and other convenient fixtures. This property was a donation for the city of Frederick, and was conveyed by a deed executed by Lewis Birely, Esq., dated the 30th day of May 1831, recorded in Frederick county.

Respectfully submitted,

G. BROWN, *Treasurer,*
Balt. & Ohio Rail Road Company.

The evidence to date indicates that early financial statements evolved from operations reports. The prototype of an income statement, issued in 1831, began as a volume-of-traffic report detailing the number of passengers and dollars collected from ticket sales by month.

Over time, a number of individual managers with different titles became identified with the information in the financial reports. The report immediately following the statement of revenues was the monthly transportation expenses by category and was prepared by William Woodville, "Auditor & Superintendent of Transportation." Woodville, appointed in February 1830 as auditor, was charged "to keep the books of the company, to examine and certify to all claims or accounts against the company, and to perform such other duties as the President may require of him." As such, this was a controllership function. "Auditing" was performed by a Committee of the Board of Directors [B&O, Minute Books, 1830, p. 287].

In 1837, George Brown, the treasurer, reported on cash receipts, disbursements, and cash balance. This reporting responsibility changed when Woodville, who had held the title "auditor," became the superintendent of transportation, reflecting the increased importance of train operations. Later information about the revenues and expenses of the transportation department and the treasurer's reports about cash became the responsibility of J. I. Atkinson, whose title was initially "secretary." After several years of secretary reports, Atkinson became the secretary-treasurer, then simply the "treasurer." Much of the consistency in the financial statements during this period of rapid development and change can be associated with Atkinson's terms of office from 1837 until 1866.

The income statement, as noted, appeared initially as an operating report of quantity of freight and number of passengers. It evolved into separate transportation department statements of revenues and expenses before being "netted" together. It then appeared in 1834 in a "T-account" format and thereafter in a vertical format, starting in 1840 (see Table 8). "Earnings of the road for the year" was shown before interest expense and dividend income of the Washington branch. This reflected a modern operating income concept, separating and calculating operating income before other investing expense and revenue.

The 1840 annual report contained the first full balance sheet. It appeared as a large "T-account," with a side marked "Dr." (listing the asset accounts with balances) and a side marked "Cr." (detailing the equity and liability accounts) (see

TABLE 8
1840 Income Statement in Vertical (Columnar Format)

(B)
Statement of the Revenue and Expenses of the Baltimore and Ohio Rail Road Company, on account of the Main Stem of the Road, for the year ending the 30th of September, 1840

The amount received for the transportation of passengers and merchandise for the year ending the 30th of September, 1840, is ..		$432,883.70
And the expenses for the same period are as follows, to wit:		
For transportation, including Fuel, salaries of Superintendent, Agents, Conductors, etc. etc....	$104,280.12	
For repairs of the Road,	85,463.73	
For repairs of Depots and Water Stations,	11,790.78	
For repairs of Passenger Cars,	6,739.75	
For repairs of Burthen Cars,	19,800.14	
For repairs of Locomotives,	36,401.66	
For repairs of the Monocacy Bridge,	1,806.89	
For Office and Incidental expenses, including Salaries, House Rent, etc. etc.	8,905.63	
For interest on borrowed money,	5,005.30	
Making		280,194.00
And showing the earnings of the Road *for the year to be*	$152,689.70	
The interest paid during the year on account of the loan created for the purchase of Stock in the Washington Branch Road, amounts to	56,328.00	
And the dividend to be received from said Road, 46,467.00		
The difference is		9,861.00
Showing the net revenue for the year to be		$142,828.70

Office of the Baltimore and Ohio Rail Road Company,
October 1, 1840
J. J. ATKINSON, *Sec'y*.

Table 9). The statement changed to a vertical format in 1853. This change in format coincided with the B&O achieving one of its key westbound objectives, linking Baltimore to a port on the Ohio River. The balance sheets presented until 1853 are un-

TABLE 9
B&O's First Reported Balance Sheet
1840 Annual Report: "T"-Account Format

(A)

The Baltimore and Ohio Rail Road Company, October 1, 1840

DR			CR.		
Stock in the Washington Branch Road,		$1,032,600.00	Loan at Six per cent.for the purpose of taking Stock in Washington Road		$1,000,000.00
Cost of Road to Harpers Ferry	$3,465,048.79		Stock,	$4,000,000.00	
Real Estate and Depots,	266,136.86		Less instalments unpaid,	257.50	
Locomotives, Horses, Mules, and Harness, Passenger and Burden Cars	480,329.99				3,999,742.50
		4,211,535.64	Suspense Account,		1,260.21
			Stock Orders issued,		515,000.00
Cost of Road west of Harpers Ferry		1,094,639.85	Due the Washington Branch Road,		96,790.15
John I. Donaldson and Fielding Lueas, Jr. Commissioners, for this amount of City Six per cent. Stock placed in their hands for the redemption of Stockholders,		700,000.00	Loans from Banks on City Stock, on account of the City of Baltimore,		374,962.54
Baring, Brothers & Co. London,		3,181,005.11	City of Baltimore,		1,074,694.59
City Six per cent. Stock on hand,		176,322.53	State of Maryland Five per cent Sterling Bonds,		3,200,000.00
Bills Receivable,		3,234.92	Premiums on Sterling Bills,		2,588.79
Expenses of Stock Certificates of the State, to be refunded by the Commissioner of Loans,		1,711.40	Revenue,	583,469.00	
Cash in the hands of Disbursing Officers,		1,379.88	Less Expense, Repairs and Interest,	336,522.00	
Cash in hand,		109,556.45			*246,947.00
		$10,511,985.78			$10,511,985.78

Office of the Baltimore and Ohio Railroad Company, October 1, 1840

J. J. ATKINSON, *Sec'ry.*

**To this amount will be added the dividend from the Washington Branch Road due the Main Stem, $46,467, and make the net Revenue $293,414.*

titled, except for the "(A)" caption. It was referenced as "statement A" in the letters to shareholders. In 1853, the reformated statement became the "Statement of Accounts." The ordering of assets during the first 30 years was basically from long-term, permanent assets to liquid assets, with cash listed last, consistent with a British style. The sources of assets were a mixed ordering of liabilities and equity during the 1840s to 1853. When the "T" format was replaced by the vertical format in 1853, "Liabilities" (which included equities) appeared at the top of the statement, with assets at the bottom. The first accounts listed in this section were the common stock accounts, followed by long-term debts, then short-term debts. As was done in the 1840s, the "statement of accounts" showed the "profit and loss" account balance (formerly "revenues less expenses") last, after the current liabilities.

Financial statements seemed to assume new levels of importance during the administration of President McLane. Starting in 1837, statements were placed before construction, engineering, and transportation reports, immediately following the president's letter to the shareholders. Thus, by advancing in relative placement, financial statements were assigned a more prominent position, reflecting the role that financial information played and supplanting operational reports by individual managers. At first, McLane eliminated subordinate reports when he took office in 1837, only to reinstate them after "reorganizing" the railroad late in his tenure. McLane's "reorganizing" initiative occurred after a year-long (second) trip to England to raise capital and to study British railroads and their structure and operations, including such diverse matters as locomotive engines and management. McLane and Chief Engineer B.H. Latrobe were active in securing data which permitted comparisons between other U.S. roads as well. McLane is identified with the introduction of reports by three principal superintendents: (1) the master of transportation, (2) the master of machinery, and (3) the master of roads. However, the origins of this practice also trace back to the second (1828) annual report, which includes reports from the board of engineers. The three superintendents reflected McLane's structuring of the B&O around these major railway functions. Duties and responsibilities appeared to be carefully defined. It is unclear, however, if this new structure was the result of the influence of the British railroads or by the companion study by Latrobe of New England railroads, especially the Western. Examples of such studies include the 1838 reports by B&O engineers Knight and

Latrobe. Their January and May publications to McLane report on "several of the most important rail roads in the middle and northern States of the Union . . . which we visited under your directions" [Knight and Latrobe, 1838, p. 3]. Perhaps the source of the organizational structure was both. In any event, the B&O as "the B&O University" would influence other railroads; railroading, itself, would have an impact on the structure of larger manufacturing companies later, during America's industrial revolution of the 1880s and after [Chandler, 1979].

McLane's administration developed fundamental reporting schemes such as assigning alphabet letter labels to statements, "(A)," "(B)," "(C)," etc., and referencing the statements not as "the income statement" but as "the statement marked B." This practice of alphabet labeling used up the single alphabet by 1857, and some reports were being number labeled. By 1859, the last exhibits were given double letters (e.g., "AA," "BB," etc.). The practices of labeling reports by letters and numbers and referencing them as "exhibits" or "tables" were employed by other railroads such as the Illinois Central Railroad (1856) and the Delaware, Lackawanna & Western Railroad (1856). This is possibly evidence of the B&O's influence.

As noted above, the first, full B&O balance sheet was published in 1840 under McLane's presidency. Revenues less expenses were shown on the right side as part of the determination of the equity amount. This practice continued until 1849, when President Swan issued his first B&O annual report and included a statement calculating the amount of profit retained in the business (see Table 10). "The policy of President Thomas Swann (1848-1853) was the completion of the road to the Ohio at any costs. . . . Earnings were used as capital and dividends declared in stock . . ." [Reizenstein, 1897, pp. 80-81]. This disclosure provides some of the earliest evidence of what Leland Jenks [1944] attributed only to post-Civil War railroads; namely, the practice of "companies to invest their earnings in necessary improvements and extensions…," which meant foregoing dividends, a practice about which foreign security holders complained bitterly. But as Jenks observed: "This financing of corporate growth from within may fairly be claimed to be an American innovation in capitalistic technique, which has only recently been diffused to the British Isles" [Jenks, 1944, p. 10]. The B&O's annual reports may evince one of the first uses, if not the origin, of this practice among significant early 19th century U.S. corporations. The statement calculating the amount of earnings retained by the B&O first appeared in the

1849 annual report. It remained as an untitled schedule until 1854, when it was labeled "Statement of Profit and Loss" and linked the "*Nett* Receipts Statement" to the balance sheet for the first time.

Table 10 shows the 1849 profit and loss (retained earnings) statement. It appears as an account labeled with "debit" and

TABLE 10
The Baltimore and Ohio Rail Road Company
Retained Profits Report in "T"-Account Format

DR.				CR.		
Oct. 1, 1848,	Dividend in Stock	$245,00	Oct. 1, 1848,	Nett receipts for the year ending this day		$551,558 07
Oct. 1, 1849,	Debts paid during the year, including . . . . Interest on Bonds.	313,960 36	April 1, 1849,	Dividend from the Washington Branch. . . .		30,978
" "	Appropriation for the Sinking Fund	40,000	Oct. 1, 1849,	do. "		30,978
" "	Improvements and Stocking the Road, . . .	218,372 93	" "	Gross Receipts for the year ending this day, ... $1,241,205 45		
" "	Dividend of five per cent. in Stock on . . . . $7,227,400 now declared	361,370		Less expenses of working the road and keeping it in repair. 644,634 15		
" "	Balance	31,382 08			596,571 30	
		$1,210,085 37			$1,210,085 37	

Office of the Baltimore and Ohio Rail Road Company, October 1st, 1849.

J. I. ATKINSON, *Treasurer.*

"credit" sides. The account is in balance because the balance amount is computed, or supplied, for the debit side. This amount ($31,382.08) is the retained earnings. "Nett receipts" taken from the previous year's retained profits are the starting point of the calculation. The income statement's gross receipts and "working expenses" are netted for that year (after being shown on the "nett-receipts" statement). The cost of interest (on debts), as well as the cost of improvement of the railway, are treated as "debits," just as dividend declarations, reducing the balance of retained earnings. This treatment indicates that the cost of interest was not treated as an expense, but rather as a distribution of operating profits to debtholders. Also, certain types of expenditures on railway improvements, which now would be capitalized as assets and depreciated over time or expensed directly on the income statement, were treated as a direct reduction in the retained-profit balance. This view of income and of expense treatment, which differs from the modern accrual and matching model, challenges our contemporary comprehension of the concept of profitability.

Table 11, an exhibit taken from the 1851 annual report, reflects not only revenues by source, expenses, and "nett receipts" for each year of operation, but also shows dividends and surplus reinvested during this period. While dividends were not an annual event, by the late 1840s and early 1850s, reinvested profits became a major source of the capital employed to complete the link to the Ohio River.

Revenue and Profitability: Table 12 reports the invested cost of the railroad originally estimated (1827) versus actually incurred (1853). Estimated (1827) vs. actual (1853) annual revenues for the entire route are also given. Growth of revenues occurred as the rail line expanded—in particular after reaching Harper's Ferry in 1834 and Cumberland, Maryland in 1842. In l853, the whole line from Baltimore to Wheeling on the Ohio River (a distance of 380 miles) was opened for use, generating revenue increases as each section of track extended service between east and west.

Annual documents reveal the profitability of the B&O where, in relation to revenue, profits often reached 50% or more. This margin indicates the economic value added by the B&O to shippers and passengers when compared with the costs of shipping freight or traveling by other means (wagon or canal). The high profit margin contrasts with the significant fixed and long-term investment of constructing the railroad. How-

TABLE 11
Schedule of Dividends
Table O
Trade, Revenue, Expenses, Profits and Dividends of the Baltimore and Ohio Rail Road, from the time of its opening, in 1830, to the present date, September 30, 1851

Years ending Oct. 1st	RECEIPTS									Expenses	Nett Receipts	Dividends		Surplus Reinvested
	Passengers				Tonnage				Total Receipts Passengers and Tonnage	Total for Passengers and Tonnage		Per cent	Amount	
	Carried in Washington Branch Trains	Carried in Main Stem Trains	Total Number of Passengers on Both Road	Receipts from Passengers and Mails	Eastward Freight Tons	Westward Freight Tons	Total Freight Tons	Receipts from Tonnage						
1830									$14,711	$11,985	$ 2,726			
1831		81,905	81,905	$27,250	3,876	2,055	5,931	$4,155	31,405	10,995	20,410		$69,975	$15,325
1832		89,022	89,022	67,910	29,445	11,640	41,085	69,027	136,937	75,673	61,264			
1833		88,633	88,633	83,233	37,166	25,589	62,755	112,447	195,680	138,485	57,195		30,061	27,134
1834		94,844	94,844	89,182	36,192	19,929	56,121	116,255	205,437	138,402	67,035			67,035
1835	12,147	85,611	97,758	93,540	46,979	25,655	72,634	169,828	263,368	161,216	102,152		45,002	57,150
1836	75,416	81,686	157,102	128,126	40,805	25,898	66,703	153,186	281,312	212,937	68,375			68,375
1837	73,474	67,225	140,699	145,625	40,697	33,901	74,598	155,676	301,301	289,125	12,176			12,176
1838	83,749	60,767	150,516	166,694	47,447	30,079	77,526	198,530	365,224	271,581	93,643			93,643
1839	86,964	65,537	152,501	173,860	54,573	45,878	100,451	233,487	407,347	312,700	94,647			94,647
1840	87,202	65,216	152,418	17,035	62,736	25,638	88,374	255,848	432,885	275,189	157,694		80,000	77,694
1841	107,136	64,493	171,629	179,616	42,056	23,443	65,499	211,454	391,070	239,622	151,448		130,000	21,448
1842	94,566	60,002	154,568	181,177	37,600	30,243	67,843	245,315	426,492	216,715	209,777			209,777
1843	78,425	71,108	149,533	274,617	55,523	27,191	82,714	300,618	575,235	295,833	279,402	2	140,000	139,402
1844	99,106	74,661	173,821	336,876	69,886	33,224	103,110	321,743	658,619	311,633	346,986	2 ½	175,000	171,986
1845	103,588	98,870	262,458	369,882	90,865	50,541	141,406	368,721	738,603	363,841	374,762			374,762
1846	157,157	123,107	280,264	413,341	110,356	83,559	193,915	468,346	881,687	454,840	426,747	3	210,000	216,847
1847	151,753	136,921	288,674	447,020	183,824	79,511	263,335	654,917	1,101,937	590,829	511,108	3	210,000	301,108
1848	170,196	160,974	331,170	488,376	205,174	66,078	271,252	725,288	1,213,664	662,106	551,558			551,558
1849	171,573	165,309	336,882	394,497	287,894	63,761	351,655	846,708	1,241,205	644,634	596,571			596,571
1850	214,360	180,905	395,265	438,375	402,905	74,650	477,555	905,430	1,343,805	609,589	734,216			734,216
1851	164,862	164,054	328,916	406,796	459,000	75,921	535,020	942,427	1,349,223	695,919	653,303			653,303
Totals	1,931,728	2,086,840	4,018,578	$5,083,028	2,345,098	854,584	3,200,482	$7,459,406	$12,557,147	$6,983,849	$5,573,295		$1,089,138	$4,484,157

TABLE 12
Estimates Versus Actual Costs, Miles and Revenues

Estimated cost of construction reach Ohio River – Feb. 1827	$ 5,000,000	
Actual cost of construction		
Baltimore to Harper's Ferry	$4,000,000	
Harper's Ferry to Cumberland	3,623,606	
Cumberland to Wheeling	6,631,721	
Total actual cost to reach the Ohio River (Jan. 1853)	$14,255,327	
Estimated length of road – Baltimore to the Ohio River (Feb. 1827)		290 miles
Actual length of Road – Baltimore to the Ohio River (Jan. 1853)		379 miles
Estimate revenues per year (Feb. 1827)	$ 750,000	
Actual revenues per year (Oct. 1, 1853)	$ 2,033,420	

Source: Reizenstein [1897, p. 86]

ever, caution must be used when introducing such "present-minded" analysis. The income numbers and the asset numbers were measured without the benefit of many late 20th century concepts and thought habits, such as the capital-revenue distinction for expenditures. That is, these early B&O amounts for income and asset numbers do not reflect cost of renewals and betterments, which today would be capitalized but were then deducted directly from the retained profits, since the practice of "matching" and the concept of depreciation were, at best, nascent.

Special Reports: The B&O annual reports over the first 30 years included a variety of "special reports" to inform shareholders about transitory conditions or events. Often the practice of including them would evolve into a continuing process. For example, special reports began with the second annual report (1828), when the letter to the directors from the board of engineers was printed. This letter described the surveyed route and discussed distances, elevation, and the difficulties of various possible alternative routes. Forty-two pages in length, it overshadows the contents of the other 13 pages of this annual report.

The third annual report follows the pattern of the second, with a 13-page president's letter and eight pages of reports from the board of engineers. These reports are even more detailed and included data for alternative routes.

The fourth annual report (1830) continues the trend of disclosing internal management information to investors. It includes not only construction and route alternatives, but also a very detailed analysis of wheels and rail design (with formulas and calculations) and a cost analysis of rail versus canal transportation and steam versus horse as sources of motive power. These types of cost analysis continued to be presented throughout the 1830s and 1840s.

The 1855 report carries a two-page safety report with a seven-page appendix detailing each of the deaths and severe injuries that had occurred on the road and its property during the year. No clear need was identified for the initiation of this report. In it, the railroad denied responsibility for many of these hazardous episodes; however, B&O management seemed concerned about passenger safety. This report appeared only once although in other annual reports before and after 1855, injury/fatality data are mentioned.

Comparative Reports: An Early Example of Benchmarking: Rate-adjustment information provides the basis for another type of special study. This kind of report first appeared in the 1836 annual report (see Table 13 (A)). Typically, the B&O sought to portray itself as the lowest-priced provider of transport of goods and passengers compared with other competitors. The granting of rate increases was controlled by state legislatures and was difficult to achieve. It appears that it had to be demonstrated that an addition to the rate was needed in order to offer a competitive return on the cost of capital. Given the significant investment by city and state governments, the Maryland legislature did have an interesting dilemma in dealing with rate requests. Voters wanted low rates, but capital investment required a competitive return. Rate-proposal comparisons with other railroads were useful to demonstrate to stockholders that the B&O's costs were well managed. Table 13 (A) shows the rates of six other railroads for 1836, manifesting an early use of industry comparisons from annual report information (benchmarking). This may be one of the first such reported attempts at financial statement analysis. By 1852, New England railroads' financial data were being published comparatively in *Hunt's Merchants Magazine* [Previts and Merino, 1998, pp. 92-

93]. The comparisons to other railroads became more elaborate with the passage of time. Table 13 (B) is taken from the 1848 annual report. Here, the B&O compares itself with six other railroads as to both cost and revenue (freight-ton and passenger on a per-mile basis). The B&O also analyzed performance by the ratio of expense to revenue (the complement of profit margin). Thus, the B&O used financial ratios and industry comparisons early on. These innovations seem to represent another set of B&O innovations.

TABLE 13 (A)
1836 Annual Report
Rate Comparison—President's Letter

*(President arguing for rate increase)**

	Passenger per mile	Freight/Ton per mile
B&O Railroad	3¢	4½¢
Petersburg Rail Road	5¢	10¢
Winchester and Potomac	6¢	7¢
Portsmouth and Roanoke	6¢	8¢
Boston and Providence	5¢	10¢
Boston and Lowell	3½¢	7¢
Mohawk and Hudson	5¢	8¢

* President also explaining why profit level low and the reason why no dividends could be paid in 1836.

At an early stage, B&O reports contained yearly comparisons to demonstrate progress and growth to shareholders. Revenues and expenses for two years were first collated in 1834, only four years after the first revenue activity. Comparison of the current year to previous years was practiced off and on again until 1847, when it became standard to present long-term revenue and expense comparisons for all years going back to 1831 (see Table 11).

Illustrations and Diagrams: Early B&O annual reports provided terrain and route maps. The very first annual report (1827) contains a map of the intended route. This information was important to investors who wanted to follow the company's progress and evaluate management's plans and decisions. Subsequent years' reports continued this practice.

Only one illustration is to be found in the first 30 years of company annual reports. For 1830, there is a diagram of the rim and flange profile, detailing an innovation in the design of the rail and track. Along with this illustration are pages of engi-

TABLE 13 (B)
1848 Annual Report
Table N
Comparison of the cost of Construction and Operation upon seven of the leading Rail Roads of the United States, prepared from their most recently published annual reports

NAME OF ROAD	Length of Road in Miles	Cost of Road and Equipment	Cost per Mile	Receipts from Passengers	Receipts from Tonnage	Total Receipts, Including Mails, Rent, &c	Total Expenses	Ratio of Expense to Receipt per Cent	Cost per Mile Run	Cost per Passenger per Mile—Cents	Cost per Ton per Mile	Charge per Passenger per Mile	Charge per Ton per Mile
Boston and Lowell	25 3/4	1,956,719	75,990 .00	209,612	234,815	448,556	253,409	56.5	101.1	1.749	1.220	2.20	3.30
Boston & Providence	41	2,544,715	62,066.00	226,103	118,173	363,328	175,346	48.2	77.5	1.821	2.286	3.14	6.10
Boston & Worcester	44 5/8	4,113,610	92,182.00	304,580	374,663	772,170	381,986	49.5	94.2	1.375	1.700	2.10	3.48
Eastern Rail Road	38 1/4	2,937,207	76,789.00	343,373	50,455	424,841	160,083	37.6	66.2	1.255	2.172	2.69	4.33
Western Rail Road	156	8,769,474	56,215.00	502,322	785,346	1,325,336	676,690	51.	82.6	1.094	1.716	2.81	2.80
Georgia Rail Road	213	3,447,398	16,185.00	157,695	280,486	477,053	175,553	36.8	62.9	2.077	1.638	4.17	4.73
Average of the above	86.4	3,961,520	63,238.00	290,614	307,323	635,214	303,844	46.6	80.7	1.562	1.789	2.85	4.12
Balt. & Ohio R.R.	179	$9,500,067	$53,073.00	$445,254	$717,212	$1,213,665	$662,106	54.5	72.4	1.092	1.829	2.04	2.59

The statements of the Boston and Lowell, Boston & Worcester, and Western Rail Road are for the year ending Nov. 30th, 1847; that for the Eastern Rail Road is for the year ending Dec. 31st, 1847; and that for the Boston & Providence Road for one or other of those dates. For the Georgia Rail Road the statements are for the year ending March 31st, 1848.

The statements for the Baltimore and Ohio Railroad include the cost of its expensive horse power establishment, which the other roads are not burdened with. Excluding this, the expense per mile run on this road is but 68.5 cents, and per passenger per mile, 1.030 cents, and per ton per mile, 1.759 cents.

The rate per ton and per passenger per mile for the Baltimore and Ohio Rail Road, in the above table, is different from and higher than that shown in table K. This is owing to the different way of dividing the expenses between passengers and tonnage, adopted in that table, and to the subtraction of a part of the apparent current expenses, and their treatment as "capital," in making up the statements of that table.

The proportions upon the several roads of engines in use on the road to those under repair and unemployed, are stated in the preceding report. See page 31.

neering formulas and calculations of wheel size and strength. This is the first known use of a technical illustration in U.S. corporate annual reporting. As Graves et al. [1996, p. 76] pointed out, the inclusion of pictures in annual reports was a rare phenomena until the 1940s.

INFLUENCE AND IMPACT OF B&O ANNUAL REPORTS

The B&O annual reports appear to have been prepared with a candor and openness on the part of management that are consistent with a relationship established between a company and an investing public supportive of the company's origin and purposes. There was a "common ground," the personal and public benefit from having this mode of transportation succeed. Details of operations, innovations, and discoveries were freely shared. But, not only did management communicate with stockholders, it informed all members in this new industry of its discoveries and innovations. This openness was hailed and appreciated. The editor of the *American Railroad Journal* stated in 1835:

> We acknowledge the favor by the President of the Company, of a copy of the Ninth Annual Report of the Baltimore and Ohio Rail Road Company, and cannot refrain from here expressing our own, and we believe the thanks of the entire Rail Road community, as well in Europe as in America, for the candid, business-like liberal manner, in which they annually lay before the world the result of their experience.
>
> It will not be saying too much, we are sure, to nominate them the Rail Road University of the United States. They have labored long, at great cost, and with a diligence that is worthy of all praise in the cause, and what is equally to their credit, they have published annually the results of their experiments, and distributed their reports with a liberal hand that the world might be cautioned by their errors and instructed by their discoveries. Their reports have in truth gone forth as a textbook, and their road and workshops have been a lecture-room to thousands who are now practising and improving upon their experience. This country owes to the enterprise, public spirit and perseverance of the citizens of Baltimore, a debt of gratitude of no ordinary magnitude, as will be seen from the President's report in relation to their improvements upon and performances with their locomotive engines, when compared

> with the performances of the most powerful engines in Europe, or rather in imagination, in 1829, only six years ago [Hungerford, 1928, Vol. 1, p. 112].

As Hungerford noted, much of the detailed engineering information about such things as engine comparisons, platewheel inventions, switches, and turntables was technically beyond the level of knowledge or interest of shareholders. Yet these details of B&O experiments and innovations were invaluable to engineers and mechanics of other railways, and undoubtedly these disclosures advanced the industry. As the editorial suggests and Hungerford echoed frequently in his volumes, the B&O was truly a "railroad university," sharing the results of its experiences through the "textbook" of its annual reports.

The B&O's innovations and developments in financial reporting and disclosure influenced other railroads just as its technological advances did. By the l850s, other railroads followed the B&O pattern of referencing financial statements as statement (A), (B), etc. Examples of other principal roads whose reports are similar to the B&O model include the Illinois Central (1855), the Delaware, Lackawanna & Western (1856), and the Louisville & Nashville Railroad (1860).

Similarly, the 1849 Delaware, Lackawanna & Western Railroad, the 1856 Illinois Central Railroad, and the 1860 Louisville & Nashville Railroad emulated the B&O practice of including the reports of the chief engineer and the general superintendent as part of their annual reports. While not conclusive, this evidence is consistent with the B&O's leadership practices in the railroad industry and the "railroad university" view.

Assessing the Importance of B&O Reports: By l860, 30,000 miles of railroad were operational in the U.S., representing about half of the known mileage in the world [Ratner et al., 1993, p. 330]. The B&O was the first among these roads to address the needs of investors for information to sustain the unprecedented scale of public-capital investment. This important early 19th century venture, marveled at because of its feats of engineering and technology, has only begun to be examined from the perspective of its contributions to accountancy, reporting and disclosure, cost control, and financial management.

The B&O can be identified with several important innovations. It was America's first railroad operating regular passenger and freight service. It was America's first big-business enterprise, with over $30 million invested in construction by the

1850s (dwarfing the Erie Canal's cost of $7.6 million to complete in the mid-1820s). The B&O was a technological innovator, experimenting with steam-powered locomotion (e.g., the *Tom Thumb*) and the development of multiple-wheeled engines and cars that rode on axles using a flange-rail design. It employed the first telegraph to operate the railroad and developed the first coal car, supporting development of that energy source to fuel an industrial revolution.

The B&O was inventive in other important organizational ways. It developed a management structure that allowed it to run a far-flung, multitasked, complex enterprise with the precision and efficiency for which railroad transportation became known. Financial reporting and accounting innovations were also produced by this early 19th century "high-tech" organization. Among our most important findings is that the B&O accounting system was oriented to producing financial statements as opposed to the accounting practice of the period which emphasized record keeping as the objective of the accounting system. This observation is consistent with Chatfield's [1974, p. 222] hypothesis that by the 1840s, financial statements had become the focus of the accounting system. This development became reflected in the accounting textbooks of the day. Information, rather than mere record keeping, became the output of the B&O's accounting system, a significant innovation to accounting practice in America during this pre-Civil War era.

This archival research has found annual report disclosure being employed to fulfill a stewardship obligation. However, stewardship is only one aspect of disclosure. Performance analysis presentations and resource allocation decisions of management are conveyed to the owners in these reports. The information detailed by the B&O even goes beyond these objectives. Much information is about internal operating activities of use to middle managers; other information is highly technical and complex, not comprehensible to individual investors but "textbook" material for engineers of other railroads.

Even considering a late 20th century view, the amount of disclosure, the types of disclosure, and the candor of these early reports, rendered when details of disclosure were voluntary, are impressive. Practical managers, trained in engineering, developed insights into cost accounting, which advanced accounting from its double-entry bookkeeping function to a tool for management for evaluating, planning, and controlling an enterprise. Internal control and comptrollership departments also were

instituted to safeguard assets and to process large volumes of transactions for timely, useful reports to manage operations. New ideas in financing (e.g.; using a forerunner of preferred stock, using retained profits as a financing source, issuing stock dividends) were used or described in its reports. Innovations in reporting included the income (operating) statement, which evolved from statements that quantified the number of passengers and the amount of freight moved and the expenditure statements, and a balance sheet, which evolved from a history of right-of-way ownership, to a "T" format of debit and credit listings of accounts and balances, to a near-modern form. A "retained earnings" statement appeared when the retention of profits proved to be a very important source of financing. B&O innovations—technological, organizational, and financial—were prototypes not only in the railroad industry, but also for the manufacturing companies that would emerge during the following decades.

FUTURE RESEARCH

This study is exploratory and preliminary. It examined one company, albeit a leading one, for the first 30 years of its 130-year life. Numerous issues have been raised, but resolutions must be left for future work. Certainly, a careful examination of other contemporary railroads' disclosure practices can provide insights as to the B&O's influence, as well as the influence of other railroads upon the B&O. British railroads of the period are one added area worthy of research attention because of their likely influence upon the B&O. European capital markets and information requirements are important to an in-depth understanding of the B&O's disclosure practices. American canals are a forerunner and a model for railroad development; this industry's accounting practices may offer greater insight into railroad reporting and may push the understanding of corporate financial accounting back a few decades further.

For the B&O itself, there is more work to be done; the minutes of directors' meetings and other company documents will certainly lend insight to the disclosures made in the annual reports. Further analysis of the management organization structure and the cost accounting developments of the B&O would give insight into how information was used to manage railway operations. Financial accounting at the B&O during and after the Civil War until the start of the 20th century offers another research direction.

A critical perspective of the B&O's disclosure practices may also prove to be a worthwhile stream of research. Certainly, points made by the paper as to the voluntary nature of disclosure by B&O's management can be challenged and examined in light of the charter's mandate that a statement of affairs be published annually. A second critical area is in the management attitude and disclosure of labor practices, problems, and worker safety issues. Strikes and violence in 1831 by unpaid workers, which precipitated the calling out of troops to suppress the strike, received relatively little mention in the annual report.

Other critical issues relate to railroad safety and environmental concerns. The 1855 annual report revealed for the first time the extent of how dangerous railroad construction and operations were for bystanders, passengers, and employees. Sixty-one deaths were reported. The company seemed only concerned over passenger safety. Deaths and dismemberment of employees and bystanders appeared not to have been a responsibility which management was willing to shoulder. This accident report was only issued once, with only the mention of casualty statistics again four years later. Neither fires nor environmental problems caused by railroad operations were mentioned in the first 30 annual reports. These, like the safety and labor problems, were not issues disclosed fully to outside investors. A 20th century view would find such disclosures significant. However, critics should view these shortcomings as reflective of 19th century management practice.

Finally, the issue of why the management of the B&O underestimated the cost of construction and the related timetable of the project, its impact as to a more immediate impression of success and the facilitation of capital funds, is left to future research. Thus, there is much interesting work to be done using the B&O's financial data as the foundation for historical research in accounting, business, and economic history.

REFERENCES

Baltimore and Ohio Railroad (1830), Board of Directors' Minute Books, B&O Museum and Library, Baltimore.

Boockholdt, J. L. (1978), "Influence of Nineteenth and Early Twentieth Century Railroad Accounting on the Development of Modern Accounting Theory," *Accounting Historians Journal*, Vol. 5, No. 1: 9-28.

Chandler, A. D., Jr. (1977), *The Visible Hand – The Managerial Revolution in American Business* (Cambridge, MA: Belknap Press of Harvard University).

Chandler, A. D., Jr. (ed.) (1979), *The Railroads: Pioneers in Modern Management* (New York: Arno Press).

Chatfield, M. (1974), *A History of Accounting Thought* (Fort Worth, TX: Dryden Press).

Claire, R. S. (1945), "Evolution of Corporate Reports," *Journal of Accountancy*, Vol. 79, No. 1: 39-51.

Edwards, J. R. (1984), *Studies of Company Records*: *1830-1974* (New York: Garland Publishing, Inc.).

Fleischman, R. K. and Tyson, T. N. (1998), "Archival Research Methodology," unpublished paper presented at the 25th Annual Meeting of the Southeastern Region of the American Accounting Association, Winston-Salem, NC.

Giroux, G. (1997), "Annual Report of the Minehill and Schuylkill Haven Railroad Company: 1844-1964," paper presented at 1997 Conference of Academy of Accounting Historians, Richmond, VA.

Graves, O. F., Flesher D. L., and Jordan R. E. (1996), "Pictures and the Bottom Line: The Television Epistemology of U.S. Annual Reports," *Accounting, Organizations and Society*, Vol. 21, No. 1: 57-88.

Hungerford, E. (1928), *The Story of the Baltimore & Ohio Railroad 1827-1927*, Vol. 1 (New York: G. P. Putnam's Sons).

Jacobs, T. (ed.) (1995), *The B&O: America's First Railroad* (New York: Smithmark).

Jenks, L. (1944), "Railroads as an Economic Force in American Development," *Journal of Economic History*, Vol. 4, No. 1: 1-20.

Knight, J. and Latrobe, B.H. (1838), *Report upon the Locomotive Engines and the Police and Management of Several of the Prinicipal Rail Roads in the Northern and Middle States, being a Sequel to the Report of the 8th of January, 1838 upon Railway Structures* (Baltimore: Lucas & Deaver).

Levenstein, M. C. (1992), "Information Systems and Internal Organization: A Study of the Dow Chemical Company, 1890-1914," *Business and Economic History*, Vol. 21: 17-21.

McKinstry, S. (1996), "Designing the Annual Reports of Burton PLC from 1930 to 1994," *Accounting, Organizations and Society*, Vol. 21, No. 1: 89-111.

Michael, R. R. (1996), "Voluntary Disclosure in a Nineteenth Century American Corporation: The Demise of Managerial Information as a Significant Element of Financial Reporting," *Accounting Historians Journal*, Vol. 25, No. 2: 1-33.

Napier, C. J. (1995), "Secret Accounting in New Zealand: P&O and the Union Steam Ship Company, 1917-1936, in Tsuji, A. and Garner, S.P. (eds.), *Studies in Accounting History* (Westport, CT: Greenwood Press): 8-27.

Nash, G. D. (1964), "Government and Business: A Case Study of State Regulation of Corporate Securities," *Business History Review*, Vol. 38, No. 2: 144-161.

Nikitin, M. (1990), "Setting Up an Industrial Accounting System at Saint-Gobain (1820-1880)," *Accounting Historians Journal*, Vol. 17, No. 2: 73-94.

Pollens, H. (1952), "Aspects of Railway Accounting Before 1868," in Solomons, D. (ed.), *Studies in Costing* (London: Maxwell and Sweet Publishing Co.): 332-335.

Previts, G. J. and Merino, B. D. (1998), *A History of Accountancy in the U.S.* (Columbus, OH: The Ohio State University Press).

Ratner, S., Soltow, J. H., and Sylla, R. (1993), *The Evolution of the American Economy*, 2nd ed. (New York: Macmillan).

Reed, S. (1989), "A Historical Analysis of Depreciation Accounting: The United States Steel Experience, *Accounting Historians Journal*, Vol. 16, No. 2: 119-154.

Reizenstein, M. (1897), *The Economic History of the Baltimore and Ohio Railroad 1827-1853* (Baltimore: Johns Hopkins University Press).

Snook, D. (1998), "Crumbling Highway Finds New Direction," *Cleveland Plain Dealer*, May 24: A-1, 14.

Spraakman, G. P. (1999), "Management Accounting at the Historic Hudson's Bay Company: A Comparison to 20th Century Practices," *Accounting Historians Journal*, Vol. 26, No. 2: 35-64.

Stone, M. S. (1984), "The Pension Accounting Myth," *Accounting Historians Journal*, Vol. 11, No. 2: 19-38.

Vangermeersch, R. (1978), "Comments on Accounting Disclosures in the Baltimore and Ohio Annual Reports from 1828 Through 1850," *The Academy of Accounting Historians Working Paper Series*, Vol. 2: 318-337.

Vollmers, G. (1993), "Accounting for Distribution Costs in the Dennison Manufacturing Company During the 1920s and 1930s," *Accounting Historians Journal*, Vol. 20, No. 2: 83-94.

Vollmers, G. (1997), "Industrial Home Work of the Dennison Manufacturing Company of Framingham, Massachusetts, 1912-1935," *Business History Review*, Vol. 71, No. 3: 444-470.

Vollmers, G. (1999), "Using Distribution Costs in Decision Making at the Dennison Manufacturing Company, 1909 to 1949," *Accounting Historians Journal*, Vol. 26, No. 1: 127-151.

Williams, R. (1999), "Management Accounting Practice and Price Calculation at Boulton and Watt's Soho Foundry: A Late 18th Century Example," *Accounting Historians Journal*, Vol. 26, No. 2: 65-87.

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THE DAWNING OF THE AGE OF QUANTITATIVE/EMPIRICAL METHODS IN ACCOUNTING RESEARCH: EVIDENCE FROM THE LEADING AUTHORS OF *THE ACCOUNTING REVIEW*, 1966-1985

Abstract: This study documents changes that took place in *The Accounting Review* during 1966-1985 compared with earlier 20-year periods, 1926-1945 and 1946-1965. The comparisons are based on examining the articles published in *The Accounting Review* and written by its leading authors (i.e., those authors who published the most articles). The article considers topics, research methods, financial accounting subtopics, citation analyses (including influential journals, articles, books, and authors), length, author background, and other items. This study shows that *The Accounting Review* evolved into a journal with demanding acceptance standards whose leading authors were highly educated accounting academics who, to a large degree, brought methods and tools from other disciplines to bear upon accounting issues.

INTRODUCTION

Accounting research changed noticeably in the 1960s. Various factors played a role in this change, including criticisms of business education in the 1959 reports by Gordon and Howell and by Pierson [Dyckman and Zeff, 1984]; the adoption by the American Assembly of Collegiate Schools of Business in 1967 of the doctorate as the terminal degree for accounting faculty [Bricker and Previts, 1990]; change in research and writing standards as required by business faculties in promotion and

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tenure decisions [Langenderfer, 1987]; and a general belief that scientific methods could help solve social and business problems [Whitley, 1988]. Chatfield [1975] noted that *The Accounting Review* was in transition during the late 1950s and early 1960s, with nonaccountants making contributions using methods from other disciplines. In addition, Chatfield [1975, p. 6] noted that in the 1960s, there was a trend toward empirical studies.

While it is generally acknowledged that there was a change in the type of research published in *The Accounting Review*, the extent of that change has yet to be documented. Were previous methods abandoned altogether? Among the newer research methods, which were the most popular? Did interest in financial accounting topics continue to decline? Were new, never-considered topics addressed? Which journals/authors/articles/books influenced the contributors to *The Accounting Review*? What was the educational/professional background of the contributors, and how did their work differ from that of their predecessors?

These questions are here addressed for the leading authors (i.e., those authors who published the most articles; see Table 1 for the list of names) of *The Accounting Review* during the 1966-1985 period.[1] The results are directly comparable with *The Accounting Review's* leading authors during the 1926-1945 and 1946-1965 periods as reported by Fleming et al. [1990, 1991].[2] Hence, this study extends our previous work by analyzing the output of the leading authors during 1966-1985, the next 20-year period.[3]

Specifically, this research analyzes, relative to the earlier studies, the following attributes of the articles published by the leading authors: (1) topic, (2) research method, (3) cross-classification of topic and research method, (4) financial accounting

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[1]Heck and Bremser [1986] compiled the list of the leading authors. For their list based on "all articles," Heck and Bremser counted main articles, notes, and articles appearing in the Education Research (previously, Teacher's Clinic) and Financial Reporting Sections. Not included were comments, replies, and articles appearing in featured columns (e.g., Accounting Exchange).

[2]Heck and Bremser [1986] identified the leading authors for each of the 20-year periods 1926-1945, 1946-1965, and 1966-1985. There has been a strong interest in the accounting literature in prolific authors as evidenced by Heck and Bremser's article as well as others [Williams, 1985; Jacobs et al., 1986; Richardson and Williams, 1990].

[3]The emphasis in this study is on analyzing the next 20-year period. One of the major findings, as reflected in the title to the paper, is the shift to quantitative/empirical research methods.

subtopics, and (5) citations of articles and books including journals and authors. Other details are also provided, such as article length, background information on the leading authors, and other changes in *The Accounting Review*. Through examining and classifying the individual articles of the leading authors, conducting a "single" citation analysis (similar to that of Brown and Gardner [1985a, 1985b] and others), reporting other details, and comparing the 1966-1985 results to those of the earlier periods, a perspective emerges on the evolving nature of accounting research in the work of the leading authors.

The results of these analyses are presented in the following sections of this paper. The first section discusses the topics and research methods. The subsequent section reports the results of the citation analysis. This is followed by sections on article length, biographical background of the leading authors, and other changes. A synthesis of the nature of the changes in the work of the leading authors of *The Accounting Review* is contained in the final section.

TOPICS AND RESEARCH METHODS

As in the previous periods examined by Fleming et al. [1990, 1991], classification schemes adapted from Sundem [1987] were used to classify the articles by topic and research method. The topic classification scheme is shown in Exhibit 1, while the research method categorization is displayed in Exhibit 2.[4] Each of the three authors of this paper independently classified each article written by the leading authors with respect to topic (as well as to financial accounting subtopic) and research method. The objective was to determine the primary emphasis of topic and research method in the article. The three authors then reached group decisions as to the appropriate classifications. In almost all cases, a unanimous consensus was

[4]The topic classification scheme is identical to that reported in Fleming et al. [1991, p. 31]. The research method categorization is slightly embellished to be more definitive. Specifically, the description of "economic modeling" was expanded to include explicitly papers dealing with information economics and economic choice theory, which have strong elements of analytical and statistical modeling. In addition, the description of "history" was expanded to include papers tracing the development of a practice or concept which relied on secondary sources, not just those papers employing archival methods. This description better reflects the classification decisions made in this and the earlier periods. Also, book reviews of accounting classics are included in the history category. Similarly, the description of "deductive" was expanded to reflect better the nature of the articles classified as such.

achieved. Occasionally categories were decided by a split 2-to-1 vote.

EXHIBIT 1
Topic Classification Scheme

FINANCIAL (Fin): External reporting issues even though they may impact internal reporting also. Inventory valuation papers are classified as financial rather than managerial.
MANAGERIAL (Man): Internal reporting issues.
EDUCATION (Edu): Studies on pedagogy and curriculum matters.
RESEARCH METHODS (Res): Focused completely on such methods without direct application to an accounting issue.
AUDITING (Aud): Related to tasks performed by auditors.
PROFESSIONAL (Pro): Professional practice of accounting firms.
TAX: Federal income tax issues.
INFORMATION SYSTEMS (Inf): Broad range of papers from office automation, to evaluation methods for accounting software, to the effects of different data storage systems on decision making, etc.
NONPROFIT/GOVERNMENTAL (Non): Requiring the special circumstances of such organizations to be a major influence on the research.
INTERNATIONAL (Int): Assessed uniquely international aspects of an issue such as differences in accounting practices, generally involving more than one country.
OTHER (Oth): Not related to one of the above.

Source: adapted from Sundem [1987, pp. 194-195]

EXHIBIT 2
Research Method Classification Scheme

DEDUCTIVE (Ded): The deductive studies that do not fit in other categories, including opinion pieces. These nonempirical studies are primarily verbal/descriptive-type articles where a logical conclusion follows from a set of assumptions or premises (other than modeling studies). In addition, this category was interpreted to include inductive and legal research methods as well.
ANALYTICAL MODELING (Ana): Studies using models with no specific underlying economic theory but using mathematical techniques.
GENERAL EMPIRICAL (Gen): A catchall that includes primarily descriptive empirical work.
ECONOMIC MODELING (Eco): Studies which bring economic analysis to bear on a topic; they may be mathematical or verbal models. Papers based on information economics or economic choice theory are included here.
STATISTICAL MODELING (Sta): Studies which use models where the main focus is on statistical models.
CAPITAL MARKET (Cap): Studies using security prices to measure reaction or association.
BEHAVIORAL (Beh): Studies conducted to measure the reaction of students or professional subjects.
HISTORICAL (His): Papers that use archival methods to study an issue of current interest. Also included are papers that trace the development of a practice or concept using secondary sources and book reviews of accounting classics.

EXHIBIT 2 (continued)

SIMULATION (Sim): Studies where the analysis is so complex that computer simulation is necessary.
SURVEY (Sur): Studies reporting information gathered by questionnaire about practices or attitudes.

Source: adapted from Sundem [1987, p. 198]

Topics: Table 1 shows that the leading authors published 154 articles in ten topical areas.[5] The international area was the only one in which they did not publish a paper. Financial accounting was the most popular topic (48% of the articles), followed by managerial accounting (25%), education (8%), research methods (6%), and auditing (5%). The leading authors published only a few papers in the professional, tax, information systems, and nonprofit/governmental areas.

The leading authors of the 1966-1985 period published essentially the same percentage of their articles in the financial accounting area as did the leading authors of the 1946-1965 period. Although this percentage is down from the 1926-1945 period, it nevertheless shows the continued strong interest in financial accounting among the leading authors. Interestingly, all but Manes of the 19 leading authors published a financial accounting article in *The Accounting Review* during the 1966-1985 period. Similarly, only two (William Campfield and Robert Van Voorhis) of the 22 leading authors during 1946-1965 and only one (Lloyd Morey) of the 19 leading authors during 1926-1945 did not publish a financial accounting article in *The Accounting Review*. Hence, for 60 years there has been widespread interest in financial accounting among the individual leading authors.

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[5]As noted, the leading authors and their respective number of publications were originally identified by Heck and Bremser [1986]. With only two exceptions, using the criteria identified by Heck and Bremser [1986, pp. 735-736], articles equal in number to that reported by them were located. The two exceptions were for Ijiri and Swieringa where one less than the number of articles reported by Heck and Bremser could be found. Also, it should be noted that five of the articles were coauthored by the leading authors listed in Table 1. Hence, there were only 149 actual articles examined. The coauthored articles were classified as financial (three articles), managerial (one article), and auditing (one article). Adjusting the overall classification numbers for this double counting does not appreciably affect the results.

TABLE 1
Major Topic by Author

	Fin*	Man	Edu	Res	Aud	Pro	Tax	Inf	Non	Int	Oth	Total
Joel Demski	4	8			1							13
Lawrence Revsine	10		1	2								13
Harold Bierman	9	1										10
A. R. Abdel-khalik	4	2		1	1						1	9
Robert Kaplan	3	6										9
Yuji Ijiri	5	2			1							8
Rene Manes		7						1				8
James McKeown	5		3									8
Robert Ashton	1		1	3	2							7
William Beaver	5			1							1	7
Ronald Copeland	2		2	1			1		1			7
Edward Deakin	3		3		1							7
Don DeCoster	1	3	2			1						7
Robert Jensen	1	4		1							1	7
John Livingstone	3	3						1				7
Enrico Petri	2	3					2					7
Roman Weil	6		1									7
Jerry Weygandt	6		1									7
Robert Swieringa	4				1	1						6
Total	74	39	13	9	7	3	3	2	1	0	3	154
Percent, 1966-85:	48	25	8	6	5	2	2	1	1	0	2	100
Percent, 1946-65:	46	13	21	0	1	8	2	0	2	5	3	100**
Percent, 1926-45:	67	6	8	0	2	3	3	0	8	0	4	100**

*see Exhibit 1 for abbreviations
**does not add up to 100 percent because of rounding errors

Managerial accounting was the second most popular topic during the 1966-1985 period. Its 25% share of the articles was nearly double that of the 13% of the 1946-1965 period which, in turn, was more than double the 6% of the 1926-1945 period. It was the only topic whose proportion of articles increased in both 1966-1985 and 1946-1965.

The percentage of education articles during 1966-1985 declined to 8% from 21% during 1946-1965. This decline was likely due, at least in part, to the changing role of education articles in *The Accounting Review*. In 1971, the "Education Research and Academic Notes" section of *The Accounting Review* replaced the "Teacher's Clinic" where Flesher [1991, p. 153] reported articles on education research, teaching methods, and "think" pieces that had been published. In 1975, the name of the section was changed to "Education Research," with the academic notes portion [Tracy, 1971, p. 156], consisting of classroom innovations, practical pointers, observations, materials' development, clever examples, or other experiences, dropped. The "Education Research" section was restricted to " . . . re-

search findings regarding theory and technique applied in accounting courses . . . " and " . . . developments . . . that are of primary and fundamental importance" [DeCoster, 1975, p. 160]. Hence, the section became more restrictive in the type of articles which could be published. In addition, Flesher [1991, p. 154] noted that *Issues in Accounting Education* started publication in 1983 on an experimental basis, and that the "Education Research" section of *The Accounting Review* was discontinued in 1986 when *Issues* began publication on a regular, semiannual basis.

Although still relatively small in number, articles on research methods and auditing increased among the leading authors during the 1966-1985 period. The interest in research methods reflected the use of quantitative/empirical research methods of the era. The increase in auditing articles was apparently part of a general trend among all authors in *The Accounting Review*. Sundem [1987], in his analysis of all published articles in *The Accounting Review* during his term as editor (1982-1986), reported that auditing papers represented 16 percent of the articles.[6]

Few articles were published by the leading authors in the other areas during the 1966-1985 period or, in most cases, in these areas during the prior periods. Moreover, the exceptions were largely due to the efforts of specific individual authors. For example, 5% of the articles during the 1946-1965 period were in the international area. Of the ten international articles published, nine were authored by Mary Murphy. Similarly, 8% of the articles during 1946-1965 were in the professional area, but nine of the 15 articles in this area were authored by Campfield. In addition, while 8% of the 1926-1945 articles were in the nonprofit/governmental area, six of the 13 were authored by Morey. Thus, there was not a widespread interest among the leading authors in professional, tax, information systems, nonprofit/governmental, or international areas during the first 60 years of *The Accounting Review*.

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[6]Sundem's results, based on all authors, were not directly comparable to those of this study which are based only on the work of leading authors. In addition, his results were just for 1982-1986 rather than the 20-year period examined in this study. For those readers with an interest, the other major topical areas while Sundem [1987, p. 202] was editor were financial accounting (45% of articles published), managerial accounting (17%), tax (6%), and professional (5%). The remaining areas constituted 2% or less of the articles.

Research Methods: Table 2 illustrates a dramatic change in the research methods used by the leading authors. The use of the deductive method fell from over 80% during the 40-year period 1926-1965 to only 29% during 1966-1985.[7] Moreover, each of the other methods was used more during 1966-1985 than 1946-1965.[8]

TABLE 2
Research Methodology by Author

	Ded*	Ana	Gen	Eco	Sta	Cap	Beh	His	Sim	Sur	Total
Joel Demski		3		6	1				3		13
Lawrence Revsine	7		1	1		1		1	1	1	13
Harold Bierman	5	3		2							10
A. R. Abdel-khalik	1		1	1		2	3			1	9
Robert Kaplan	2	3	1		1	1		1			9
Yuji Ijiri	2	2		1	2			1			8
Rene Manes	2	5		1							8
James McKeown	3		2			1	2				8
Robert Ashton	1		2		4						7
William Beaver	2		1	1		3					7
Ronald Copeland	1		4				1			1	7
Edward Deakin	2		2		1	1			1		7
Don DeCoster	2		2		1		1	1			7
Robert Jensen	1	2	1		3						7
John Livingstone	2	2	2		1						7
Enrico Petri		5		2							7
Roman Weil	3	2	2								7
Jerry Weygandt	4	1	2								7
Robert Swieringa	4			1		1					6
Total	44	28	23	16	14	10	7	4	4	4	154
Percent, 1966-85:	29	18	15	10	9	6	5	3	3	3	100**
Percent, 1946-65:	87	4	2	1	2	1	0	2	0	2	100**
Percent, 1926-45:	84	1	2	1	0	0	0	11	0	1	100

**see Exhibit 2 for abbreviations
**does not add up to 100 percent because of rounding errors

[7]The classification "deductive" is a misnomer to some extent. Modeling studies, for example, could also be considered "deductive." Opinion pieces are not "deductive." However, rather than developing an alternative classification scheme, the one developed by Sundem [1987] was adopted since he developed it specifically for *The Accounting Review* and since developing a definitive classification scheme would be impossible and inevitably arbitrary to some degree. Hence, the articles written by the leading authors were classified into that category which was considered best from those specified by Sundem (excluding "other" which was not defined by Sundem). Consequently, the "deductive" category came to represent other studies which were primarily verbal/descriptive, including legal research methods and even a few inductive-type studies. Perhaps a better classification title is "other deductive/descriptive."

[8]Again, the double counting of five articles because of coauthorship among the leading authors (see footnote 5) did not appreciably affect the results. Two of these articles were classified as economic modeling, and the others as analytical modeling, statistical modeling, and capital markets respectively.

Perhaps the most surprising result is that the deductive approach was used to the extent found despite the changing research method environment described previously. The change away from the deductive method to quantitative/empirical methods did not occur all at once. This gradual change is made even more evident by examining the 1966-1975 and 1976-1985 subperiods. Of the 44 articles which primarily used the deductive method, 32 of them (73%) were published during 1966-1975, while only 12 of them (27%) appeared in the later decade. Clearly, 1966-1985 was a transitional period in research methods.[9]

Among the methods other than the deductive method, analytical modeling was the most popular as shown in Table 2. This was followed by general empirical, the other two modeling methods (economic and statistical), and by the empirical areas of capital market and behavioral. Hence, modeling methods tended to lead the change away from the deductive method.[10]

Although they were generally employed more in the 1966-1985 period than in the earlier periods (except for the historical method), the research methods of historical, simulation, and survey were used relatively infrequently by the leading authors. It is interesting to note that the historical method was used relatively more commonly during the 1926-1945 period than in subsequent periods. This was largely due to the work of A.C. Littleton and Stanley Howard. Of the 19 articles classified as using the historical method during 1926-1945, 11 of them were authored by Littleton with an additional five by Howard. Hence, as in the case of topics, the efforts of specific authors accounted for the passing popularity of certain methods or topics during the earlier periods.

At the individual author level, all but two (Demski and Petri) of the leading authors during 1966-1985 used the deduc-

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[9]Although not directly comparable to the results of this study, it is interesting to note that during Sundems's term as editor (1982-1986), only 4% of the published articles in *The Accounting Review* used the deductive method primarily [Sundem, 1987, p. 202]. Sundem [1987, p. 202] also reported the following frequencies for the other research methods in published articles: general empirical (31%), capital market (14%), behavioral (22%), analytical modeling (6%), economic modeling (7%), statistical modeling (4%), simulation (4%), historical (2%), survey (1%), and other (4%).

[10]Sundem [1987, p.196] combined some methods into groups which he referred to as modeling (including analytical, economic, statistical, and simulation) and empirical (including general empirical, behavioral, capital market, and survey). Combining methods into groups in a like manner for this study resulted in modeling with 40% of the articles and empirical with 29%.

tive method. However, only three (Revsine, Weygandt, and Swieringa) employed the deductive method a majority of the time. The leading authors tended to utilize a variety of methods. Petri used the fewest (two), Revsine the most (seven).

Topics by Research Methods: Table 3 shows a cross-classification of topics by research methods. During the previous 20-year periods, the deductive method was clearly the dominant method, not only overall but for each topic except for the "other" category during 1926-1945, when it was the primary method in only 29% of the articles. Its next two lowest percentage rates of use were 60% for the professional area during 1926-1945 and 76% for the managerial area during 1946-1965. In the financial area, it was the primary method in 86% of the articles for 1926-1945 and 87% for 1946-1965.

TABLE 3
Major Topic by Research Methodology

	Ded*	Ana	Gen	Eco	Sta	Cap	Beh	His	Sim	Sur	Total
Financial	24	7	14	8	5	10	1	3	1	1	74
Managerial	5	18	1	6	4		1	1	3		39
Education	7	1	1				2			2	13
Research Methods	2		1		4		2				9
Auditing	1		2	2	1		1				7
Professional	2		1								3
Tax		2	1								3
Information Systems	2										2
Nonprofit/governmental			1								1
International											
Other	1		1							1	3
Total	44	28	23	16	14	10	7	4	4	4	154

*see Exhibit 2 for abbreviations

By contrast, the deductive method during 1966-1985 was the primary method a majority of the time for only the education, professional, and information systems topics.[11] Although it was the most popular method in the financial area, the deductive method's use declined to 32% of the time, with 15 of the 24 financial-deductive articles published during the first half

[11]These results are not affected by the five papers which were coauthored by the leading authors (see footnotes 5 and 8). The five papers were cross-classified as financial-statistical modeling, financial-economic modeling, financial-capital markets, managerial-analytical modeling, and auditing-economic modeling.

(1966-1975) of the time period. Hence, there was a clear trend away from financial-deductive articles during 1966-1985.

Overall, Table 3 shows that a variety of research methods was used in each area. The only methods that were used a majority of the time in a given area (other than the deductive method) were analytical modeling in the tax area and general empirical in the nonprofit/governmental area. However, the modeling methods of analytical, economic, statistical, and simulation tended to dominate managerial articles, accounting for 31 of the 39 articles (79 percent).

Financial Accounting Subtopics: Table 4 shows a classification by subtopic and author of the articles in financial accounting, the most popular area. The articles were classified using the chapter titles taken from an intermediate and an advanced accounting textbook.[12] Each of the 74 financial accounting articles could be classified in this manner. The seven articles classified as "other" each related to a single subtopic (i.e., pensions, inventories, leases, current and contingent liabilities, statement of changes, foreign currency, and intangible assets).

As shown in Table 4, the four most popular subtopics were changing prices, environment and concepts, plant and equipment, and income taxes.[13] Except for income taxes, there has been considerable interest in each of these topics throughout the first 60 years of *The Accounting Review*. Changing prices was the fourth most popular topic among the leading authors during 1926-1945, and it was tied as the fifth most popular during 1946-1965. Environment and concepts was the most popular topic during each of the periods 1926-1945 and 1946-

[12]For definitiveness, as done for the earlier periods, the chapter titles from Kieso and Weygandt's *Intermediate Accounting* [1989] and Baker et al.'s *Advanced Accounting* [1989] were used as the basis for the classification scheme. Some of the related chapters were combined into a single subtopic (e.g., the two inventory chapters were considered one subtopic, the chapter on depreciation was combined with plant and equipment; etc.). Also, the chapter titles were shortened in some cases (e.g., the first two chapters, entitled "The Environment of Financial Accounting and the Development of Accounting Standards" and "Conceptual Framework Underlying Financial Accounting," were combined into a single subtopic called "environment and concepts").

[13]Because of coauthorship among the leading authors, there were actually only six articles in the plant and equipment subtopic; hence, plant and equipment and income taxes were tied as the third most popular area. The other two subtopics affected by the double counting of articles due to coauthorship were accounting changes (actually three articles) and income statement (actually three articles).

1965, while plant and equipment was the third most popular during 1926-1945 and second during 1946-1965.

TABLE 4
Financial Accounting Subtopics by Author

	Topic Number (see code below)												
	1	2	3	4	5	6	7	8	9	10	11	12	Other
Joel Demski		3							1				
Lawrence Revsine	5	2	1	1									1
Harold Bierman	1	1	3				1		1		1		1
A. R. Abdel-khalik					1					2			1
Robert Kaplan	1		1			1							
Yuji Ijiri	2	2	1										
Rene Manes													
James McKeown	3				1			1					
Robert Ashton		1											
William Beaver				2				2	1				
Ronald Copeland					1				1				
Edward Deakin		1	1					1					
Don DeCoster													1
Robert Jensen		1											
John Livingstone	1			1									1
Enrico Petri	1					1							
Roman Weil	1			1		2					1		1
Jerry Weygandt					1		3			1		1	
Robert Swieringa				1							2		1
Total Articles	15	11	7	6	4	4	4	4	4	3	3	2	7
Total Authors	8	7	5	5	4	3	2	3	4	2	2	2	7

Code for topics: 1 = changing prices; 2 = environment and concepts; 3 = plant and equipment; 4 = income taxes; 5 = accounting changes; 6 = consolidations; 7 = dilutive securities and earnings per share; 8 = financial statement analysis; 9 = income statement; 10 = full disclosure; 11 = long-term liabilities; and 12 = investments.

That changing prices was the most popular during 1966-1985 was not surprising given the high level of inflation during the 1970s and early 1980s, as well as the experiments by the Securities and Exchange Commission (SEC) and the Financial Accounting Standards Board (FASB) with accounting for changing prices. Similarly, the continued interest among the leading authors in standard setting and basic concepts reflected the changes in the standard-setting process at the time, such as the formation of the FASB and the development of its conceptual framework. Less obviously, plant and equipment, especially depreciation, continued to be an area of strong interest. This interest was indicative of an ongoing concern with allocations [Thomas, 1969, 1974].

The income tax subtopic area of financial reporting became

a new area of concern for the leading authors during 1966-1985. There were only three tax articles written by the leading authors during 1946-1965 and none during 1926-1945. This interest reflected issues such as the controversial accounting for deferred taxes at the time prescribed by Accounting Principles Board Opinion No. 11 in 1967 [Johnson, 1996, p. 191].

After adjusting for double counting (see footnote 13), it is interesting to note that these four areas accounted for 54 percent (38 of 71) of the financial accounting subtopics. Hence, there was some concentration of interest among the leading authors. The leading authors of the earlier periods also tended to concentrate on specific topics; the comparable percentage for 1946-1965 was 45 percent (39 of 86) and 61 percent (70 of 115) for 1926-1945. Hence, while a variety of subtopics was addressed, the leading authors focused on contemporary financial accounting issues. For example, ten of the 15 articles classified as changing prices made direct reference to one or more of the professional pronouncements regarding changing prices issued by the Accounting Principles Board, the FASB, or the SEC.[14] As another example, Demski [1973, 1974] referred to the formation of the FASB in his articles dealing with the general problem of standard setting.

A CITATION ANALYSIS

As done for the 1926-1945 and 1946-1965 periods, this study employs a "single" citation analysis to help determine the impact on the leading authors of a wide spectrum of accounting literature. Similar analyses have been performed in other contexts to determine the influence of journals [Dyckman and Zeff, 1984; Brown and Gardner, 1985a], to identify significant works [Brown and Gardner, 1985a; Gamble and O'Doherty, 1985], and for other uses (e.g., investigating the role of historical articles in research [Bricker, 1988a, 1988b]).

This study employs citation analysis as follows. To be

[14]It is interesting to note that of the 15 articles classified as changing prices, eight of them used the deductive method. Hence, the deductive method still played a significant role in this area. However, of the financial accounting subtopics containing at least two papers, the only other area where the deductive method was used in a majority of the papers was in the long-term liabilities area (in two of the three papers). In terms of absolute numbers, the next highest use of the deductive method after the changing prices area was in the environment and concepts area where it was used in three papers (out of 11).

counted as a journal article, the author, title, and journal minimally had to be identified in a leading author's article. For books to be counted, at a minimum, the author and the title had to be given. Papers in proceedings were counted as journal articles with the proceedings counted as a journal. Chapters in books and unpublished Ph.D. dissertations were counted as books. A work cited more than once in the same leading author's article counted as one in the tabulations (it did not matter if a work was cited more than once in the same article). Self-citations, including coauthored works of the leading author, were eliminated in determining which journals, articles, books, or authors had the greatest influence on the leading authors. In counts for influential authors, full credit was given to any coauthors of cited works.

TABLE 5
Citations of Articles and Books

	Articles		Books		Articles & Books	
	Total	Avg.	Total	Avg.	Total	Avg.
Joel Demski	168	12.9	90	6.9	258	19.8
Lawrence Revsine	104	8.0	56	4.3	160	12.3
Harold Bierman	16	1.6	10	1.0	26	2.6
A. R. Abdel-khalik	114	12.7	51	5.7	165	18.3
Robert Kaplan	140	15.6	71	7.9	211	23.4
Yuji Ijiri	26	3.3	26	3.3	52	6.5
Rene Manes	48	6.0	45	5.6	93	11.
James McKeown	60	7.5	28	3.5	88	11.0
Robert Ashton	158	22.6	34	4.9	192	27.4
William Beaver	101	14.4	50	7.1	151	21.6
Ronald Copeland	50	7.1	34	4.9	84	12.0
Edward Deakin	49	7.0	7	1.0	56	8.0
Don DeCoster	39	5.6	79	11.3	118	16.9
Robert Jensen	60	8.6	34	4.9	94	13.4
John Livingstone	37	5.3	38	5.4	75	10.7
Enrico Petri	17	2.4	13	1.9	30	4.3
Roman Weil	29	4.1	14	2.0	43	6.1
Jerry Weygandt	49	7.0	22	3.1	71	10.1
Robert Swieringa	44	7.3	19	3.2	63	10.5
Totals	1,309	8.5	721	4.7	2,030	13.2

As an overview, Table 5 shows the number of citations of articles and books made by each leading author individually and collectively as a group.[15] The overall averages showed that there was a dramatic change in the use of references in the

[15]The totals in Table 5 were not adjusted for double counting the citations in the five coauthored articles by the leading authors. However, the other citation results reported in Tables 6-11 were adjusted for double counting.

period 1966-1985 compared with the previous periods. The average number of citations for both books and articles (i.e., total citations divided by total articles) of 13.2 far exceeded the averages of 3.4 for 1946-1965 and of 3.2 for 1926-1945. Similarly, the average for article citations grew to 8.5 in 1966-1985, compared with only 1.4 in 1946-1965 and 1.2 in 1926-1945. The average for book citations more than doubled to 4.7 in the 1966-1985 period, compared with an average of 2.0 in each of the earlier periods.

Dramatic differences were apparent at the individual author level as well (see Table 5). During 1966-1985, all but one leading author averaged at least four citations per article and 14 of the 19 averaged at least ten.[16] In contrast, only seven of the 22 leading authors during 1946-1965 averaged at least four citations, while no leading author averaged at least ten. During 1926-1945, there were only three leading authors out of 19 who averaged at least four citations per article and only two who averaged at least ten.

The practice of utilizing several references in articles became widespread by the leading authors in 1966-1985. As noted by Fleming et al. [1990, 1991], the leading authors of 1926-1945 had a practical orientation which decreased somewhat during the 1946-1965 period. This change in orientation toward an academic one no doubt accounted for some of the change in the use of references. However, given that 20 of the 22 leading authors during 1946-1965 had earned a Ph.D., it is difficult to attribute the dramatic increase in references during 1966-1985 to the fact that all of the leading authors had a Ph.D. (discussed subsequently). Rather, at least part of the change is due more plausibly to the expanded use of research tools and articles and books from other disciplines, as is documented below.

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[16]The one exception to an average of at least four citations per article is Bierman. Interestingly, he was the only leading author during 1966-1985 who was also a leading author during 1946-1965. Bierman published articles in *The Accounting Review* during the second half of the 1946-1965 period (1956-1965) and during most of the first half of the 1966-1985 period (1966-1974). While there was somewhat of a shift in his research methods from primarily the deductive method (used in eight of his ten articles) during the earlier period to other methods during the later period (other methods used in five of his ten articles), his style of writing did not change appreciably over the two periods. He tended to analyze problems using straightforward frameworks such as present value analysis and basic valuation models. Hence, his rate of 2.6 citations per article in the later period was not much higher than that of the 1946-1965 period when he averaged 2.1 citations per article.

Journals: Table 6 lists by name those journals cited three or more times by the leading authors. Perhaps the most striking feature of Table 6 is its length, with 54 journals identified by name. By comparison, the lists for the earlier time periods were much shorter; there were 13 journals cited three or more times by the leading authors during 1946-1965 and 15 such journals during 1926-1945.

TABLE 6
Most-Cited Journals
(A)=considered an accounting journal

Name of Journal	Times Cited
Accounting Review (A)	336
Journal of Accounting Research (A)	199
Journal of Accountancy (A)	59
Journal of Business	59
Journal of Finance	46
American Economic Review	25
Harvard Business Review	25
Organizational Behavior & Human Performance	24
Econometrica	23
Management Accounting (A)	21
Management Science	21
Bell Journal of Economics & Management Science	18
Psychological Bulletin	18
Journal of the American Statistical Association	17
Journal of Accounting & Economics (A)	15
Financial Analysts Journal	12
Journal of Political Economy	12
Journal of Applied Psychology	10
Journal of Financial Economics	9
Quarterly Journal of Economics	9
Accounting, Organizations and Society (A)	7
Financial Executive	7
Administrative Science Quarterly	6
Behavioral Science	6
Berkeley Symposium on the Foundations of Financial Accounting (A)	6
Journal of Personality and Social Psychology	6
CPA Journal (A)	5
International Economics Review	5
Journal of Experimental Psychology	5
Operations Research	5
Psychological Review	5
Review of Economics & Statistics	5
Symposium on Auditing Research (A)	5
Wall Street Journal	5
American Political Science Review	4
American Psychologist	4
Barrons	4
Industrial Engineering	4
Industrial Management Review	4
Journal of Economic Theory	4
Journal of Financial & Quantitative Analysis	4
Journal of the Royal Statistical Society	4

TABLE 6 (continued)

Name of Journal	Times Cited
National Tax Journal (A)	4
Biometrics	3
Business History Journal	3
Cognition	3
Daedalus	3
Economica	3
Fortune	3
International Journal of Accounting Education and Research (A)	3
Journal of Econometrics	3
Journal of Law and Economics	3
Review of Economic Studies	3
Social Science Quarterly	3
30 journals (tie)	2
76 journals (tie)	1

Another interesting feature of Table 6 is that only 11 of the 54 journals (21 percent) are accounting journals. Similarly, only five of the most-cited 15 journals (33 percent) have an accounting emphasis. The remaining ten journals come from the fields of general business, finance, economics, management, psychology, and statistics. In contrast, nine of the 13 most-cited journals (69 percent) during 1946-1965 had an accounting orientation. Hence, 1966-1985 can be characterized as a period in which the leading authors were significantly influenced by other disciplines.[17]

The results portrayed in Table 6 also differ from those of the 1926-1945 period. While only three of the most-cited 15 journals (20 percent) during that early period were accounting journals (not many accounting journals existed at that time), five of the most frequently cited were legal journals, such as the *Columbia Law Review* and the *Harvard Law Review*. The legal journal citations essentially disappeared during the 1946-1965 period. As previously noted, business and other social science disciplines became influential during 1966-1985.

With respect to individual journals, *The Accounting Review* was the most-cited journal, finishing well ahead of the *Journal of Accounting Research*. However, part of this difference is attributable to the fact that the *Journal of Accounting Research*

[17]Citations to accounting journals accounted for 59.7% of the total number of citations for journals listed by name in Table 6. During 1946-1965, accounting journals accounted for 87.8% of the citations for journals cited three or more times. Hence, based on number of citations of journals, the increase in influence of other disciplines on the leading authors during 1966-1985 compared with 1946-1965 is also evident.

did not start publication until 1963 and, therefore, had fewer articles which could have been referenced compared with *The Accounting Review*. Similarly, the *Journal of Accounting & Economics* ranked only 15th on this list, having started publication in 1979.

Somewhat surprisingly, the *Journal of Accountancy* tied as the third most-cited journal, along with the *Journal of Business*. However, its diminishing influence among the leading authors was evident over the first 60 years of *The Accounting Review*. During 1926-1945, the *Journal of Accountancy* was cited 35 times compared with 32 for *The Accounting Review,* a ratio of 35/32 = 1.09 (partly biased toward the *Journal of Accountancy* since *The Accounting Review* started in 1926). During 1946-1965, the comparable ratio was 38/107 (.36), while the ratio for 1966-1985 was 59/336 (.17). This downward trend is consistent with the changing orientation of the leading authors from practical to academic. Moreover, the only other journals with a practical orientation in the top 15 journals listed in Table 6 are *Management Accounting* and, to some extent, the *Harvard Business Review*. Hence, the leading authors of 1966-1985 were influenced to a large degree by academic journals from other disciplines.

Authors: Table 7 shows the most-cited authors of journal articles. Beaver, a leading author himself, is the most-cited author. His citation record clearly is an outlier and exceptional. The leading authors cited 14 of his articles, outdistancing all other authors. His most-cited article, "Predictive Ability as a Criterion for the Evaluation of Accounting Data" [Beaver et al., 1968], was cited six times.

The second most-cited author was Ball, tied with Dopuch. The leading authors cited seven of his articles, with the most-cited article, "An Empirical Evaluation of Accounting Income Numbers" [Ball and Brown, 1968], cited nine times. No other article was cited nine or more times by the leading authors.

Dopuch, long-time editor of the *Journal of Accounting Research*, was tied with Ball as the second most-cited author. The leading authors cited 11 of his works, the second most number of works cited after Beaver. Two of Dopuch's articles were cited four times each by the leading authors.

Table 7 also shows that five of the 19 listed authors are included in this study as leading authors, two (including Bierman) were leading authors from 1946-1965, two are finance professors (Fama and Roll), and one a psychology

TABLE 7
Most-Cited Authors of Articles

Name of Author	Times Cited	Articles Cited
William Beaver[a*]	34	14
Raymond Ball	21	7
Nicholas Dopuch	21	11
Eugene Fama	20	7
Yuji Ijiri[a*]	17	8
David Green, Jr.	16	8
Phillip Brown	15	4
Joel Demski[a]	15	10
Nicholas Gonedes	15	9
Robert Kaplan[a]	14	10
Paul Slovic	13	6
Richard Roll	12	6
George Sorter	12	4
Thomas Dyckman	11	8
Gerald Feltham	11	4
Harold Bierman[a,b]	10	10
Sidney Davidson[b*]	10	8
David Drake	10	4
Robert Libby	10	6
7 authors	9	—
4 authors	8	—
9 authors	7	—
12 authors	6	—
22 authors	5	—
28 authors	4	—
43 authors	3	—
134 authors	2	—
578 authors	1	—

[a]a leading author during 1966-1985
[b]a leading author during 1946-1965
*member of the Accounting Hall of Fame

professor (Slovic). Three are members of the Accounting Hall of Fame. Most remarkably, however, is that of the 19 individuals listed, 15 of them (except for Ijiri, Slovic, Dyckman, and Feltham) either earned their doctorates or were on the faculty at the University of Chicago.[18]

Table 8 lists the nine articles cited five or more times. Feltham's "The Value of Information," published in *The Accounting Review,* was cited eight times (second to Ball and Brown), while Fama's "Efficient Capital Markets: A Review of Empirical Work," published in the *Journal of Finance,* was cited seven times. Hence, unlike the earlier periods when three was

[18]This shows that the influence of particular universities on the accounting literature may be even greater than suggested by Lee [1997] in his examination of the impact of 20 elite universities on the editorial boards of six journals.

the most times an article was cited by the leading authors, specific articles seemed to be particularly influential during 1966-1985.

TABLE 8
Most-Cited Articles

Name of Author(s)	Title of Article (Journal where Published; Date Published; Times Cited)
R. Ball and P. Brown	"An Empirical Evaluation of Accounting Income Numbers" (*Journal of Accounting Research;* Autumn 1968; 9)
G. Feltham	"The Value of Information" (*The Accounting Review;* October 1968; 8)
E. Fama	"Efficient Capital Markets: A Review of Theory and Empirical Work" (*Journal of Finance;* May 1970; 7)
W. Beaver, J. Kennelly, and W. Voss	"Predictive Ability as a Criterion for the Evaluation of Accounting Data" (*The Accounting Review;* October 1968; 6)
J. Horrigan	"The Determination of Long-term Credit Standing with Financial Ratios" (*Journal of Accounting Research;* Supplement 1966; 6)
G. Sorter	"An 'Events' Approach to Basic Accounting Theory" (*The Accounting Review;* January 1969; 6)
N. Churchill	"Linear Algebra and Cost Allocations: Some Examples" (*The Accounting Review;* October 1964; 5)
D. Green, Jr. and J. Segall	"The Predictive Power of First Quarter Earnings Report: A Replication" (*Journal of Accounting Research;* Supplement 1966; 5)
C. Griffin and T. Williams	"Matrix Theory and Cost Allocation" (*The Accounting Review;* July 1964; 5)

Overall, five of the top nine cited articles were published in *The Accounting Review*, three in the *Journal of Accounting Research,* and one in the *Journal of Finance.* In addition, based on a review of these articles, five were related to financial accounting issues, three to managerial accounting issues, and one (Beaver et al.) to research methods. All of the articles were published between July 1964 and May 1970, early enough to be cited frequently by the leading authors of 1966-1985. Two of the articles (those by Ball and Brown and Sorter) also appeared on a list of most-cited articles based on an analysis of *The Accounting Review* between 1976-1982 [Brown and Gardner, 1985a, p. 101].

Table 9 shows the most-cited authors of books. Ijiri heads the list. Six of his books were cited by the leading authors with his *The Foundations of Accounting Measurement* cited six times. Bell and Edwards tied for the second most citations. All 14 of their citations were for their coauthored classic, *The Theory and Measurement of Business Income*. This book was cited most frequently by the leading authors. Paton had eight different books cited, more than any other author.

TABLE 9
Most-Cited Authors of Books

Name of Author	Times Cited	Books Cited
Yuji Ijiri[a*]	16	6
Phillip Bell	14	1
Edgar Edwards	14	1
William Paton[c*]	12	8
Maurice Moonitz*	10	4
Sidney Siegal	10	1
Gordon Shillinglaw	8	3
Robert Anthony*	6	6
Charles Horngren[b*]	6	1
J. Johnston	6	1
R. Radner	6	2
Robert Sprouse*	6	3
Andrew Stedry	6	3
Raymond Chambers*	5	1
Robert Jaedicke[b]	5	3
A.C. Littleton[b,c*]	5	3
Robert Mautz[b*]	5	4
David Solomons*	5	3
V.H. Vroom	5	4
Glenn Welsch	5	3
14 authors	4	—
33 authors	3	—
80 authors	2	—
449 authors	1	—

[a]a leading author during 1966-1985
[b]a leading author during 1946-1966
[c]a leading author during 1926-1945
*member of the Accounting Hall of Fame

As in the previous periods, the individuals in Tables 7 and 9 tended to be different scholars, the one exception during the 1966-1985 period being Ijiri. Of the individuals listed in Table 9, only Ijiri was a leading author during 1966-1985, four were leading authors during 1946-1965 (Horngren, Jaedicke, Littleton, and Mautz), and two were leading authors during 1926-1945 (Paton and Littleton). Ten of the 20 authors (50 percent) listed in Table 9 have been inducted into the Accounting

Hall of Fame.[19] This was a higher percentage than for 1926-1945 (28 percent) or 1946-1965 (33 percent).[20]

Table 10 is a compilation of the 12 books cited four or more times by the leading authors.[21] Reflecting the changing research environment, the second most-cited book, after Edwards and Bell's work, is *Nonparametric Statistics for the Behavioral Sciences* by Siegal (cited ten times). In addition, two

TABLE 10
Most-Cited Books

Name of Author(s)	Title of Book (times cited)
E. Edwards and P. Bell	*The Theory and Measurement of Business Income* (14)
S. Siegal	*Nonparametric Statistics for the Behavioral Sciences* (10)
C. Horngren	*Cost Accounting: A Managerial Emphasis* (6)
Y. Ijiri	*The Foundations of Accounting Measurement* (6)
J. Johnston	*Econometric Methods* (6)
R. Chambers	*Accounting, Evaluation and Economic Behavior* (5)
G. Shillinglaw	*Cost Accounting: Analysis and Control* (5)
E. Hendriksen	*Accounting Theory* (4)
J. Hicks	*Value and Capital* (4)
M. Moonitz	*The Basic Postulates of Accounting* (4)
M. Moonitz and R. Sprouse	*A Tentative Set of Broad Accounting Principles for Business Enterprises* (4)
L. Savage	*The Foundations of Statistics* (4)

[19]Five of the remaining ten do not appear to be accountants (Edwards, Siegal, Johnston, Radner, and Vroom).

[20]As will be seen, there is a stronger relationship between book citations and Accounting Hall of Fame membership than between combined book and article citations (Table 11) or article citations (Table 7) and Accounting Hall of Fame membership. During the previous periods, the combined book and article citations had the strongest relationship with the Accounting Hall of Fame. As noted by Fleming et al. [1991], this implies that books (and not just articles as is sometimes done) should also be taken into account in citation studies which try to determine influential authors, schools, doctoral programs, etc. Of course, other criteria besides contributions to the accounting literature are involved in selecting inductees to the Accounting Hall of Fame. These include professional and public service [Burns, 1975].

[21]Different editions of books with the same title counted as the same book.

other statistically oriented works are included in the list (*Econometric Methods* by Johnston and *The Foundations of Statistics* by Savage). Otherwise, seven of the 12 books relate to financial accounting, of which two were written by economists (*The Theory and Measurement of Business Income* by Edwards and Bell and *Value and Capital* by Hicks). Two are cost accounting textbooks (Horngren and Shillinglaw).

TABLE 11
Most-Cited Authors of Articles and Books

Name of Author	Times Cited
William Beaver[a*]	35
Yuji Ijiri[a*]	33
Nicholas Dopuch	23
Eugene Fama	22
Raymond Ball	21
Joel Demski[a]	17
Robert Kaplan[a]	17
Phillip Brown	17
David Green, Jr.	16
Nicholas Gonedes	15
Phillip Bell	14
Thomas Dyckman	14
Edgar Edwards	14
Gerald Feltham	14
George Sorter	14
Sidney Davidson[b*]	13
Maurice Moonitz*	13
Richard Roll	13
Paul Slovic	13
Harold Bierman[a,b]	12
Robert Libby	12
William Paton[c*]	12

[a]a leading author during 1966-1985
[b]a leading author during 1946-1965
[c]a leading author during 1926-1945
*member of the Accounting Hall of Fame

Table 11 shows the most-cited authors of both articles and books combined. Not surprisingly, since article citations were considerably more frequent than book citations during the 1966-1985 period, this list is dominated by authors of articles. In fact, all but one (Drake) of the individuals named in Table 7 as the most-cited authors of articles are also included in Table 11. By contrast, only five individuals named in Table 9 as the most-cited authors of books are also included in Table 11. Five of the authors listed in Table 11 were leading authors during 1966-1985, two during 1946-1985, and one for 1926-1945. Five

of the authors have been inducted into the Accounting Hall of Fame.[22]

Remarkably, Moonitz, Paton, and Sorter also appeared on the comparable list for 1946-1965. In addition, Paton appeared on the list for 1926-1945. Paton was one of the most influential individuals on the leading authors of *The Accounting Review* for 60 years.

ARTICLE LENGTH

The average length of the articles written by the leading authors during 1966-1985 was 10.9 pages, compared to an average of 6.5 pages during 1946-1965 and 8.6 pages during 1926-1945. At the individual author level during 1966-1985, seven of the leading authors averaged less than ten pages, while the other 12 averaged more than ten. Kaplan had the highest average with 15.8 pages; Copeland had the lowest with 6.4 pages.

By contrast, between 1946-1965, all of the leading authors averaged less than ten pages, while 11 of the 19 leading authors during 1926-1945 averaged less than ten pages. Hence, the work of the leading authors during 1966-1985 tended to be longer than that of their predecessors. This is consistent with using more citations, including a literature review in some cases, and employing more quantitative/empirical methods which usually require explanation.

SOME BIOGRAPHICAL INFORMATION

Table 12 reveals the doctoral-granting institution and primary affiliation for each leading author. The doctoral-granting institution was obtained from Hasselback's *Accounting Faculty Directory* [1988] which contained the necessary information for each individual. The primary affiliations, in chronological order, are those reported with the articles published in *The Accounting Review*. As mentioned, all of the leading authors earned a Ph.D., generally from a Big-Ten or private university. Except for Livingstone's time with Coopers and Lybrand, they

[22]Interestingly, during 1966-1985 there was a weaker relationship compared with the earlier periods between being cited (books and articles) by the leading authors and being inducted into the Accounting Hall of Fame. As one of the referees suggests, the cited authors from the earlier periods may have made more contributions in areas other than the accounting literature.

were all associated with a college/university, often a Big-Ten or private university, while publishing in *The Accounting Review*.[23]

TABLE 12
Doctoral Programs and Primary Affiliations

Author	Ph.D. (School-Year)	Primary Affiliations
Joel Demski	U. of Chicago-1967	Columbia U.; Stanford U.
Lawrence Revsine	Northwestern U.-1968	U. of Illinois; Northwestern U.
Harold Bierman	U. of Michigan-1955	Cornell U.
A.R. Abdel-khalik	U. of Illinois-1972	U. of Illinois; Columbia U.; Duke U.; U. of Florida; U. of Alberta
Robert Kaplan	Cornell U.-1968	Carnegie-Mellon U.; U. of Chicago; Carnegie-Mellon U.; Harvard U.
Yuji Ijiri	Carnegie Mellon U.-1963	Stanford U.; Carnegie Mellon U.
Rene Manes	Purdue U.-1968	Purdue U.; U. of Illinois
James McKeown	Michigan State U.-1969	U. of Illinois
Robert Ashton	U. of Minnesota-1973	U. of Texas at Austin; New York U.; Duke U.
William Beaver	U. of Chicago-1965	U. of Chicago; Stanford U.
Ronald Copeland	Michigan State U.-1966	Penn State U.; U. of South Carolina; Northeastern U.
Edward Deakin	U. of Illinois-1972	U. of Texas at Austin
Don DeCoster	U. of Texas at Austin-1961	U. of Washington
Robert Jensen	Stanford U.-1966	Michigan State U.; U. of Maine; Florida State U.
John Livingstone	Stanford U.-1966	Ohio State U.; Georgia Institute of Technology; Coopers and Lybrand
Enrico Petri	New York U.-1973	State U. of New York at Albany
Roman Weil	Carnegie Mellon U.-1966	U. of Chicago; Georgia Institute of Technology; U. of Chicago
Jerry Weygandt	U. of Illinois-1968	U. of Wisconsin at Madison
Robert Swieringa	U. of Illinois-1969	Stanford U.; Cornell U.

As noted by Fleming et al. [1990, 1991], eight of the 19 leading authors of 1926-1945 had not earned a Ph.D. Five of

[23]The Big Ten is an athletic conference comprised generally of large universities in the mid-western U. S. The Big Ten includes: Ohio State University, Michigan State University, University of Michigan, University of Wisconsin, University of Minnesota, University of Iowa, University of Illinois, Northwestern University, Indiana University, Purdue University, and (a recent addition of an 11th school) Pennsylvania State University. Interestingly, the University of Chicago was a member of the Big Ten when it had a football team. Also, all but two leading authors (Manes and Petri) earned their Ph.D.s at one of the elite universities identified by Lee [1997].

them had nonacademic positions (and four others held positions outside of academia) when published in *The Accounting Review*. During 1946-1965, all but two had earned Ph.D.'s and four of the 22 had nonacademic positions. By the period 1966-1985, the leading authors of *The Accounting Review* had evolved into an almost exclusively Ph.D./academic-only group. Perhaps, only such individuals have the time, training, and/or inclination to be familiar with the literature (as reflected in the growth of citations) and the frequently employed quantitative/empirical research methods (as documented earlier).

OTHER CHANGES

The percentage of editors who were also leading authors decreased in the succeeding 20-year periods. During 1926-1945, all three editors (Paton, Kohler, and Littleton) were also leading authors. During 1946-1965, only Littleton and Mautz of the six editors were also leading authors. By the 1966-1985 period, only DeCoster of the seven editors was a leading author.

The occurrence of coauthorship also changed over time. Of the 172 articles written by the leading authors during 1926-1945, only four articles (2.3 percent) were coauthored. In the 1946-1965 period, 16 of the 186 articles (7.5 percent) written by the leading authors were coauthored. However, a dramatic change occurred during 1966-1985 as a majority of the articles by the leading authors were coauthored (80 of the 149 articles, 53.7 percent).[24]

More generally, and not just in the work of the leading authors, additional changes occurred in *The Accounting Review,* such as the practice in 1975 of listing references at the back of articles rather than in footnotes, perhaps reflecting their increased importance and number. In 1977, abstracts began to be included with the published articles, a change Flesher [1991, p. 169] noted to be a consequence of a study by Abdel-khalik [1976]. Abdel-khalik found that practitioners responding to a survey, apparently concerned about the readability of *The Accounting Review*, desired to have abstracts published with the articles.[25]

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[24]These counts were adjusted for the articles coauthored by the leading authors.

[25]Another intriguing suggestion by Abdel-khalik [1976, p. 616] to increase the readability of *The Accounting Review* was not implemented. This suggestion was to include the description of the research technique in an appendix rather than in the body of the article.

Another notable change began in 1966 when an editorial board was added to the article review process. This change was made during Trumbull's term as editor; Trumbull had been making the editorial decisions himself [Flesher, 1991, p. 167].[26] Interestingly, the acceptance rate declined from about 40 percent in 1967, to 24 percent in 1969, to 20 percent in 1972, and to 13 percent from 1975-1977 [Flesher, 1991, pp. 167-168]. During this period, the readability of *The Accounting Review* came under question although a study by Caplan and Griffin did not find " . . . any widespread dissatisfaction with the publication" [quoted by Flesher, 1991, p. 168]. Nevertheless, the very undertaking of this study was indicative of the changes occurring in *The Accounting Review*.

THE CHANGING NATURE OF THE WORK OF THE LEADING AUTHORS OF *THE ACCOUNTING REVIEW*: A SYNTHESIS

This study examines characteristics of the work of the leading authors of *The Accounting Review* during 1966-1985. The results are directly comparable to those for the 1926-1945 and 1946-1965 periods reported by Fleming et al. [1990, 1991]. In short, the work of the leading authors of *The Accounting Review* has changed dramatically over the years. While financial accounting topics continued to be popular among the leading authors to about the same extent as in 1946-1965, there was growing interest in managerial and, to a lesser extent, auditing issues. Articles concerning research methods and, though small in number, information systems appeared for the first time during 1966-1985. Education articles, which hit their pinnacle during 1946-1965, experienced a decline in interest among the leading authors and were phased out of *The Accounting Review* in the 1980s.

The big change was in research methods. Modeling and empirical methods became prominent during 1966-1985, with analytical modeling and general empirical methods leading the way. Although used to a surprising extent, deductive-type methods declined in popularity, especially in the second half of the 1966-1985 period. Among the more popular topics, only in the education area, which was in decline among the leading au-

[26]Actually, this was not the first time that *The Accounting Review* had an editorial board; Littleton was technically a chair of a three-person editorial board during his term as editor (1944-1947).

thors, were deductive methods used a majority of the time. To a large extent, the world of accounting research for the leading authors had changed. One major exception to the changing world, however, was the continued interest among the leading authors in the financial accounting issues of their time.

Other changes accompanied the innovation in research methodology. The leading authors referenced about four times as many sources than in the earlier periods. While *The Accounting Review*, the *Journal of Accounting Research*, and the *Journal of Accountancy* were the most-cited journals, a host of journals from other disciplines including business, finance, economics, management, and psychology were also referenced. The use of journal articles greatly expanded, with the most influential authors cited by the leading authors being former doctoral students or faculty at the University of Chicago, including Beaver, the most-cited article author, and Ball and Brown, authors of the most-cited article, "An Empirical Evaluation of Accounting Income Numbers" [1968].

Books were also cited more frequently during 1966-1985 than in the previous periods. Like journals, the books often came from cognate disciplines, including economics and statistics. Edwards and Bell's classic, *The Theory and Measurement of Business Income* [1961], was the most-cited book, while Ijiri was the most-cited book author.

As a group, the leading authors had evolved into an almost exclusively Ph.D./academic-only set of contributors. All of the leading authors had earned a Ph.D., were accounting professors, and were affiliated with a university while publishing in *The Accounting Review,* excepting Livingstone's time with Coopers and Lybrand.[27] During 1946-1965, four of the leading authors had nonacademic positions, while during 1926-1945, five of the leading authors had nonacademic positions (four others held both academic and nonacademic positions). The leading authors of 1966-1985 were academics, not practitioners.

The leading authors tended to write longer articles than had their predecessors. Other changes included the higher incidence of coauthorship and the institution of an editorial process involving a review board. At the same time, the acceptance rate for publication in *The Accounting Review* plummeted from

[27]This is contrary to Chatfield's [1975, p. 6] claim, at least with respect to the leading authors, that more articles by "non-accountants" were published in *The Accounting Review* using " . . . ideas or methods from their own discipline."

40 percent to 13 percent in a ten-year period. Questions began to be raised regarding the readability of the journal. To summarize, *The Accounting Review* during 1966-1985 had become a journal with demanding acceptance standards whose leading authors were highly educated, accounting academics who, to a large degree, brought methods and tools from other disciplines to bear upon accounting issues.

REFERENCES

Abdel-khalik, A. (1976), "An Analysis of the Attitudes of a Sample of the AAA Members Toward *The Accounting Review*," *Accounting Review*, Vol. 51, No. 3: 604-616.

Baker, R., Lembke, V., and King, T. (1989), *Advanced Financial Accounting* (New York: McGraw-Hill).

Ball, R. and Brown, P. (1968), "An Empirical Evaluation of Accounting Income Numbers," *Journal of Accounting Research,* Vol. 6, No. 2: 159-178.

Beaver, W., Kennelly, J., and Voss, W. (1968), "Predictive Ability as a Criterion for the Evaluation of Accounting Data," *Accounting Review,* Vol. 43, No. 4: 675-683.

Bricker, R. (1988a), "Knowledge Preservation in Accounting: A Citational Study," *Abacus,* Vol. 24, No. 2: 120-131.

Bricker, R. (1988b), "Influences from Early Accounting Literature on Contemporary Research," *Accounting Historians Journal*, Vol. 15, No. 2: 83-98.

Bricker, R. and Previts, G. (1990), "The Sociology of Accountancy: A Study of Academic and Practice Community Schisms," *Accounting Horizons*, Vol. 4, No. 1: 1-14.

Brown, L. and Gardner, J. (1985a), "Using Citation Analysis to Assess the Impact of Journals and Articles on Contemporary Accounting Research (CAR)," *Journal of Accounting Research*, Vol. 23, No. 1: 84-109.

Brown, L. and Gardner, J. (1985b), "Applying Citation Analysis to Evaluate the Research Contributions of Accounting and Faculty Doctoral Programs," *Accounting Review*, Vol. 60, No. 2: 262-277.

Burns, T. (1975), "The Accounting Hall of Fame," *Accounting Historians Journal* (originally published as *The Accounting Historian*), Vol. 2: 37-39.

Chatfield, M. (1975), *"The Accounting Review's* First Fifty Years," *Accounting Review*, Vol. 50, No. 1: 1-6.

DeCoster, D. (1975), "Editor's Note," *Accounting Review*, Vol. 50, No. 1: 160.

Demski, J. (1973), "The General Impossibility of Normative Accounting Standards," *Accounting Review*, Vol. 48, No. 4: 718-723.

Demski, J. (1974), "Choice Among Financial Reporting Alternatives," *Accounting Review,* Vol. 49, No. 2: 221-232.

Dyckman, T. and Zeff, S. (1984), "Two Decades of the *Journal of Accounting Research*," *Journal of Accounting Research*, Vol. 22, No. 1: 225-297.

Edwards, E. and Bell, P. (1961), *The Theory and Measurement of Business Income* (Berkeley and Los Angeles, CA: University of California Press).

Fleming, R., Graci, S., and Thompson, J. (1990), "Characteristics of the Work of the Leading Authors of *The Accounting Review*, 1926-1945," *Accounting Historians Journal*, Vol. 17, No. 1: 5-25.

Fleming, R., Graci, S., and Thompson, J. (1991), "Tracing the Evolution of Research in *The Accounting Review* through Its Leading Authors: The 1946-1965 Period," *Accounting Historians Journal,* Vol. 18, No. 2: 26-53.

Flesher, D. (1991), *The Third-Quarter Century of the American Accounting Association 1966-1991* (Sarasota, FL: American Accounting Association).

Gamble, G. and O'Doherty, B. (1985), "Citation Indexing and Its Use in Accounting: An Awareness Survey and Departmental Ranking," *Issues in Accounting Education*, Vol. 3: 28-40.

Hasselback, J. (1988), *Accounting Faculty Directory* (Englewood Cliffs, NJ: Prentice-Hall).

Heck, J. and Bremser, W. (1986), "Six Decades of *The Accounting Review:* A Summary of Author and Institutional Contributors," *Accounting Review,* Vol. 61, No. 4: 735-744.

Jacobs, F., Hartgraves, A., and Beard, L. (1986), "Publication Productivity of Doctoral Alumni: A Time-Adjusted Model," *Accounting Review*, Vol. 61, No. 1: 179-187.

Johnson, R. (1996), "Deferred Income Tax Accounting," in Chatfield, M. and Vangermeersch, R. (eds.), *The History of Accounting* (New York: Garland Publishing, Inc.): 190-191.

Kieso, D. and Weygandt, J. (1989), *Intermediate Accounting,* 6th ed. (New York: John Wiley & Sons, Inc).

Langenderfer, H. (1987), "Accounting Education's History—A 100-Year Search for Identity," *Journal of Accountancy*, Vol. 163, No. 5: 302-331.

Lee, T. (1997), "The Editorial Gatekeepers of the Accounting Academy," *Accounting, Auditing and Accountability Journal*, Vol. 10, No. 1: 11-30.

Richardson, J. and Williams, J. (1990), "Canadian Academic Accountants' Productivity: A Survey of 10 Refereed Publications, 1976-1989," *Contemporary Accounting Research*, Vol. 6, No. 1: 278-294.

Sundem, G. (1987), "Overview of Four Years of Submissions to *The Accounting Review," Accounting Review*, Vol. 62, No. 1: 191-202.

Thomas, A. (1969), *The Allocation Problem in Financial Accounting Theory,* Studies in Accounting Research #3 (Sarasota, FL: American Accounting Association).

Thomas, A. (1974), *The Allocation Problem: Part Two*, Studies in Accounting Research #9 (Sarasota, FL: American Accounting Association).

Tracy, J. (1971), "Editor's Note," *Accounting Review*, Vol. 46, No. 1: 156.

Whitley, R. (1988), "The Possibility and Utility of Positive Accounting Theory," *Accounting, Organizations and Society*, Vol. 13, No. 6: 631-645.

Williams, P. (1985), "A Descriptive Analysis of Authorship in *The Accounting Review*," *Accounting Review*, Vol. 60, No. 2: 300-313.

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WERE ISLAMIC RECORDS PRECURSORS TO ACCOUNTING BOOKS BASED ON THE ITALIAN METHOD?

Abstract: The precise origin of the accounting records and reports outlined by Pacioli in 1494 and used in the Italian Republics is presently unknown. Historical evidence preserved in Turkey and Egypt indicates that accounting records and reports developed in the early Islamic State were similar to those used in the Italian Republics as outlined by Pacioli in 1494. Furthermore, some of the records and reports used in different parts of the Islamic State are comparable to modern-day books and reports. The religious requirement of *Zakat* (religious levy) and the increasing responsibilities of the Islamic State were the force behind the development of accounting records and reports by Muslims. The Islamic State was established in 622, and *Zakat* was imposed on Muslims in the year 2 *Hijri'iah* (H) (623). The enactment of *Zakat* necessitated the establishment of the *Diwan* (office where accounts are held) and the initial development of accounting records and reports. These records were further developed in *Addawlatul Abbasi'iah* (Abbaside Caliphate) between 132-232 H (750-847) whereby seven accounting specializations were known and practiced. Auditing played a very important role in the Islamic State and was designated as one of the accounting specializations. This paper argues that it is most likely that the commercial links between Muslim traders and their Italian counterparts influenced the development of accounting books in the Italian Republics.

INTRODUCTION

The objective of this paper is to explain and examine the accounting records and reports that were developed and used

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by Muslims prior to the publication of Pacioli's book, *Summa de Arithmetica, Geometrica, Proportioni et Propotionalita*, in 1494. This examination is based on the received wisdom that "the Italians borrowed the concept of double entry from the Arabs"[1] [Have, 1976, p. 11]. The explanation and examination aim at identifying the contribution of early Muslims to accounting literature and highlighting the possible influence of Muslims' accounting practice on the Italian Republics. The examination of this influence is of significance because Europe at that time "was temporarily at a standstill, and we shall therefore not expect to find a visible or appreciable progress in methods of accounting during that period" [Woolf, 1912, p. 54].

The geographical scope of the Arabic commercial and financial activities was very limited prior to the establishment of the Islamic State in 622 AD by the Prophet Mohammad, peace be upon him (*pbuh*).[2] Commercial and financial activities were concentrated in the hands of a few families in Makkah[3] and were focused on the Middle East region. There were two major trade sessions known as the winter and summer trade journeys [*Quran*, 106:1-4]. The winter trade journey was directed to Yemen, while the summer trade was with Ash-Sham (today known as Syria, Lebanon, Jordan, Palestine, and Israel). The "conventional" trade from Makkah to Yemen and Ash-Sham continued after 622, but began to take a different direction in the year 10 *Hijri'iah*[4] (H) (632). After the conquest of Makkah in the year 8 H (630), Arabs who embraced Islam became preoccupied with the spread of Islam beyond the Arabian peninsula, stretching their commercial activities well beyond the Middle East. Since the 8th century Arabs "sailed their galleys along the costs of Arabia and India, and arrived in Italy with luxury goods unknown in Europe" [Have, 1976, p. 13]. The increasing com-

[1]Muslims were generally referred to as Arabs. This identification could be linked to the language spoken or to the origin of early Muslims who came from Arabia.

[2]mandatory Islamic expression to be used whenever the name of a prophet such as Noah, Abraham, Ismail, Isaac, Moses, Joseph, Jesus, or Mohammad is mentioned

[3]Commonly spelt Mecca, Makkah is the appropriate pronunciation and accordingly the adequate corresponding spelling.

[4]*Hijri'iah* refers to the Islamic calendar that started with the establishment of the Islamic State in 622 in Al-Madienah Al-Munawarrah (a city in present Saudi Arabia). The Gregorian year, based on the sun, is 11 days longer than the *Hijri'iah* year, based on the moon.

mercial activities of Muslim traders also necessitated the pooling of funds to finance increasing European demands for their goods. The resulting expansion in the scope of trade led to the emergence of partnerships and the need to maintain proper accounting records and prepare adequate reports as required by the *Quran* [Al-Baqarah, 2: 282-283] to account to the entrepreneurs and partners. The need for proper accounting records and reports was also motivated by the requirement for the payment of *Zakat*[5] as detailed in the *Shari'ah Islami'iah*[6] (Islamic teachings).

In the early stages of the Islamic State, *Zakat* and other revenues were not of great financial significance and were not usually recorded [Ibn Saad, 1957, p. 400]. The geographical expansion of the Islamic State into the Middle East, Africa, and Asia, especially during the time of Caliph Omar bin Al-Khattab,[7] led to significant increases in the revenues and responsibilities of the Islamic State. These increases in revenues and responsibilities necessitated the establishment of a mechanism to ensure adequate accountability of those responsible for the collection and disbursement of the state's revenues and expenses. This mechanism was achieved by the *Sahaby* (Prophet's companion) Al-Waleed bin Hisham Al-Mugierah [As-Saleh, 1982, p. 349]. The *Sahaby* recommended the establishment of records to account for the state's revenues and expenses. This recommendation was made to Omar bin Al-Khattab who appre-

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[5]religious levy of purification of wealth which was imposed on Muslims in the year 2 H (623)

[6]*Shari'ah Islami'iah* is a very broad concept comprising the divine law governing the life of individual Muslims in their relationships with Allah, individual human beings as well as all other beings created by Allah. *Shari'ah Islami'iah* is based on the *Quran*, *Sunnah*, *Ijma'*, and *Qiyas*. The *Quran* is the Godly book of Muslims, while the *Sunnah* reflects what Prophet Mohammad (*pbuh*) said, did, and agreed to as preserved by his companions. The *Quran* and the *Sunnah* are the basic two sources of *Shari'ah Islami'iah*. The third source is *Ijma'* which should only be applied in the absence of an explicit answer to the issue in question. *Ijma'* represents the consensus of Muslim scholars about issues that are not explicitly mentioned in the *Quran* or the *Sunnah*. The final source is *Qiyas* which is represented in the analogical deductions from the *Quran*, the *Sunnah,* and the *Ijma'* for contemporary issues that are not directly mentioned in the *Quran*, the *Sunnah*, or the *Ijma'* but have similar characteristics as those existed in the past. Once a decision is made by either *Ijma'* or *Qiyas*, it becomes mandatory and cannot be overruled by future generations [Zaid, 1997, pp. 190-197].

[7]He was the second caliph and ruled the Islamic State during the period 13-23 H (634-644).

ciated the idea and established the *Diwan.*[8] Accordingly, the religious levy of *Zakat* was the real force for the development of accounting records and the establishment of the *Diwans*.

Although the establishment of the *Diwan,* and hence of accounting records, was initially developed by the Islamic State, the contribution of Muslim traders cannot be ignored. Muslim traders were religiously motivated to maintain adequate records to facilitate the recording, measurement, and reporting of their business transactions. This religious motivation was especially aimed at the measurement of profits and capital growth for the payment of *Zakat* to *Baitul-Mal* (public treasury). The payment of *Zakat* as a religious levy did not require the assessment of individuals by the state as the case is today with regard to different types of taxes. The *Ulamaa* (Muslim scholars) are of the opinion that "*Zakat* is a liability entrusted to Muslims. It is received from those who pay it freely. Those who don't pay it are followed by Allah" [Bin Jafar, 1981, p. 241]. *Shari'ah Islami'iah* specifies the sources of *Zakat*, its rates, calculations,[9] and the application[10] of funds received from *Zakat*.

FACTORS THAT CONTRIBUTED TO THE DEVELOPMENT OF ACCOUNTING RECORDS AND REPORTS BY MUSLIMS

As in many types of discovery, necessity is the mother of invention. Accounting records were developed to meet certain needs of society. The development of accounting records by Muslims was initially associated with the *Zakat* accountability and the delegation of business and government authority. Factors associated with *Zakat* and the delegation of authority in the Islamic State are represented in the institution of specialized government officials, identification of specialized skills, segre-

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[8]Some claim that the term *"Diwan"* is an Arabized Persian word [Lasheen, 1973, p. 26] while Al-Kalkashandy argued that it is an Arabic word. According to Al-Kalkashandy [1913, Vol. 1, p. 89], who wrote his book in 767 H (1366), the term *"Diwan"* is the noun from the Arabic verb *"Dawwana"* (writing). This argument is a valid one and was supported in earlier writings of An-Nahhas, the Arabic grammarian Sybaw'weh, and the Muslim scholar ibn Abbas. It was first used to mean the book of revenues as well as the office of recording and maintaining accounting books. At a later stage the term was restricted to mean office only. Now *Diwan* is used in Yemen and some other English-speaking countries to mean "lounge."

[9]as revealed in the *Quran* [Al-Ma'arej, 70: 24-25, Adh-Dhariyat, 51: 19] and further explained in the *Sunnah*, *Ijma'*, and *Qiyas*

[10]as strictly ordered in the *Quran* [Al-Taubah, 9: 60]

gation of duties, and the need for qualified employees. The requirement of *Zakat* and the delegation of business authority for individual Muslims promoted the need for the maintenance of accounting records and the measurement of business results.

Specialized government departments emerged with the foundation of the Islamic State in Al-Madienah Al-Munawwarah in the year 1 H (622). As a new state, it was necessary to identify the different functions needed to achieve its objectives. Accordingly, a number of government officials were appointed to exercise the rights, discharge the responsibilities, and protect the interests of the state. The appointment of these officials necessitated the identification and classification of specialized skills and, hence, promoted the separation of duties to prevent the accumulation of authority in the hands of one person. The principle of decentralized power was based on the principle of *Ash-Shura*[11] (consultation). The *Ash-Shura* principle requires the caliph, as well as all other individuals in different positions, to consult with the appropriate knowledgeable persons in the relevant field before making a decision on any issue affecting the state and its citizens. Accordingly, it was necessary to select employees with the appropriate knowledge and/or experience in the particular field of employment. The *Ash-Shura* principle was practiced and promoted by the Prophet Mohammad (*pbuh*) personally. He selected employees and assigned duties to his companions who were known to be competent and capable of discharging their obligations [Hawary, 1988a, p. 16]. The duties and rights of employees at different levels of the hierarchy were explicitly specified and observed from the earliest establishment of the Islamic State. The Prophet Mohammad (*pbuh*) had 42 specialized officials in his government. Each official had a specified role to play, defined duties, and a stated salary [Hawary, 1988b, p. 5].

Zakat was the common factor that influenced the Islamic State and individual Muslims in the development of accounting records and reports. The calculation and payment of *Zakat* required the maintenance of adequate records and the preparation of accounting reports to discharge the religious financial responsibility of paying *Zakat* as required by *Shari'ah Islami'iah*. The calculation of the *Zakat* demanded the careful recording and proper observation of the date of occurrence of

[11]*Ash-Shura* is a mandatory Islamic principle imposed on Muslims in the *Quran* [Al-Imran, 3: 159, Ash-Shura, 42: 38].

transactions. The importance of the date of occurrence was based on the principle of *Al-Haol* (periodicity), which was an important factor in determining whether the income was subject to *Zakat* or not. According to *Al-Haol*, an income was not subject to *Zakat* unless it had been in the possession of the owner for 12 calendar months.

The development of accounting records and reports found momentum in the notion that accounting would help in decision making, either on the state or the individual level. This notion was promoted by Imam Ash-Shafi'ie[12] who said [Shahata, 1993, p. 45]:

> . . . he who learnt accounting will make an appropriate decision . . . This means that the trader or any other person cannot express an appropriate opinion or make the right decision without the assistance of the information recorded in the books.

ACCOUNTING RECORDS DEVELOPED BY MUSLIMS

The formal establishment of the *Diwan* during the period of the second caliph, Omar bin Al-Khattab [*Encyclopedia Britannica*, 1993,Vol. 4, p. 131], included the classification of records and their layout in addition to the design and maintenance of supporting documents. Before the citizens of Ash-Sham and Iraq embraced Islam in the years 14 H (636) and 16 H (638) respectively, they were occupied by the Romans and Persians respectively. Accordingly, they used the occupiers' languages. The recording in the land *Zakat* books continued in the Roman and Persian languages for a short period of time in the *Diwans* of Ash-Sham and Iraq. Other books had already been kept in Arabic since their inception. The languages in these *Diwans* were [Ibn Khaldoon, n.d.,[13] pp. 269-270]:

> . . . converted into Arabic by the order of the Caliph Abdul-Malek 73-86 H (693-705) to the Governor of Jordan to convert the Diwan of Ash-Sham into Arabic. This conversion was completed in one year under the supervision of Surjoon the clerk of Abdul-Malek. In Iraq the Diwan was converted into Arabic by Saleh bin

[12]Imam Ash-Shafi'ie lived between 150-204 H (767-820) and was the founder of one of the four influential Islamic schools of thought known as *Madhab Ash-Shafi'ie*. The other three are *Madhab Al-Maliky*, *Madhab Al-Hanafy,* and *Madhab Al-Hanbaly*.

[13]His handwritten book was dated 767 H (1366).

> Abdur-Rahman the clerk of Al-Hajjaj who ruled Iraq and died in 95 H [714 AD]. The position of the accountant is of significance and is the third pillar of the hierarchy.

Another Egyptian historian who held the position of accountant in the 14th century [Al-Kalkashandy,[14] 1913, p. 482] believed that:

> the Diwan of Ash-Sham was converted into Arabic language by the governor of Ash-Sham Sulaiman bin Sa'eed. And that the Diwan of Egypt was converted from the Coptic language into Arabic by Abdul-Malek bin Marwan.

During the early stages of the Islamic State, the accounting records were loose-leaf. The first person to introduce bound records and registers was Caliph Al-Waleed bin[15] Abdul-Malek during the period 86-96 H (705-715) [Lasheen, 1973, p. 36]. The organization of the accounting books reached its highest level of evolution during *Addawlatul Abbasi'iah* (Abbaside Caliphate) between 132-232 H (750-847). In 132 H (750), *Diwan Al-Kharaj* (Department of Land *Zakat*) and *Diwan Al-Jund* (Department of Army Personnel) were assigned to Khaled bin Barmak, who restructured these departments, developed, and, most importantly, named the accounting books to be maintained.

The recognition of the importance of and the need for classified records and adequate reports has affected and promoted the development of accounting practice in the Islamic State. Accounting was classified into specializations of which one was the "review of books" (auditing). The others were "stable accounting" (accounting for livestock), "construction accounting," "rice-farm accounting" (agricultural accounting), "warehouse accounting," "mint accounting" (currency accounting), "sheep-grazing accounting" (farm accounting), and "treasury accounting." The responsibility of the reviewer was "to check what was written in the books" [Al-Kalkashandy, 1913, Vol. 1, pp. 130-139]. He explained the need for and responsibilities of the reviewer:

> . . . the other six are not protected from omission, error of judgement, errors of writing and accordingly it is

[14]His handwritten book was dated 767 H (1366).

[15]Bin (sometimes written Ibn) is an Arabic word commonly used by Arabs generally and Muslims especially. It precedes the name of the father and means "the son of."

> common for a person not to see his mistakes but can see others' errors. It is necessary for the head of the Diwan to appoint a person to review the books. This person must possess a high standard of the language, be hafidh [a memorizer] of the Quran, intelligent, wise, trustworthy and neither prejudiced nor inimical. When the reviewer is satisfied with the contents of the book being reviewed, he should sign in the book as an indication of his satisfaction with the contents.

The audit function played an important role in the Islamic State. The bookkeeper "had to comply with instructions, preapproved systems or models and not to depart therefrom" [Al-Kalkashandy, 1913, Vol. 1, p. 54]. Auditing was mandatory as appreciated by Al-Hariery who suggested that "accounting is subject to verification" [Al-Kalkashandy, 1913, Vol. 1 p. 154]. During that time, greater emphasis was placed on self-control as a fundamental religious principle [Al-Gazaly, 1980, Vol. 15, pp. 6-7]. Self-control was influenced by Muslims' belief that Allah is watching all acts and knows all thoughts of mankind. Self-control is followed by self-judgment which requires Muslims to observe their acts and thoughts and judge themselves before being judged by Allah. The fundamental religious principle of self-control and, accordingly, self-judgment are essential requirements of *Shari'ah Islami'iah,* as explicitly stated in the *Quran* [for example, Al-Israa, 17:14] and the *Sunnah*. According to the *Sunnah*, self-control and self-judgment are the reflection of accountability which is one of the main principles of stewardship and the agency relationship developed in the Islamic State. The Prophet Mohammad (*pbuh*) used the term *Muhasabah* to mean accounting and accountability. He also used the term *Hasaba* (accounted) as meaning recorded, stored, and counted [Shahata, 1993, p. 39].

The primary book of recording in the Islamic state was named *Jaridah* [Bin Jafar, 1981, p. 23], which is an Arabic word meaning, among other things, newspaper or journal. The use of the term "*Jaridah*" was mentioned by Al-Mazendarany in 767 H (1363) and Ibn Khaldoon in 779 H (1378). The employment of *Jaridah* was subject to registration before it could be used. Registration occurred by stamping the *Jaridah* with the sultan's seal. The registration of accounting books was mandatory for government entities, and its applicability to private entities cannot be ruled out. It is still a legal requirement in some Middle Eastern countries such as Egypt to have the "Daily Book" registered and stamped before being used. Ibn Khaldoon was one of

the famous Muslim scholars who witnessed significant discoveries and developments in several fields of knowledge including accounting. He personally contributed to these discoveries and developments during *Addawlatul Abbasi'iah* (132-232 H, 750-847). He stated that the accounting clerk had to maintain the books, sign his name at the end of the book, and stamp it with the sultan's seal. The seal usually bore either the name of the sultan or his symbol, stamped in the corner of the book [Ibn Khaldoon, n.d., p. 205].

This practice continued and was affirmed by Al-Mazendarany [1363, p. 2] who observed that the *Jaridah* starts with the phrase "In the Name of Allah, the Most Gracious, the Most Merciful." This requirement was similar to the suggestion of Pacioli that recording should start with the expression "In the Name of God" [Brown and Johnston, 1963, p. 28]. The title "journal," as referred to by Pacioli [Brown and Johnston, 1963, p. 43] and as we know it today, or "*zornal*" as it was called in Venice, may be based on the translation of the Arabic word *Jaridah*. The adoption of the expression "journal" and possibly the phrase "in the name of God" supports the view that the Italians adopted knowledge from other cultures [Have, 1976, p. 13]. This view makes Pacioli a translator of what existed in other cultures rather than an inventor [Chatfield, 1968, p. 45]. It is further suggested that Pacioli's book was "mainly based on the writings of Leonard of Piza" [Ball, 1960, p. 209], who was the first European to translate algebra from the writings of the Arabians and was supposed to have written the first treatise on bookkeeping. Furthermore, Gordon suggested in 1756 that bookkeeping would first be practiced by the first considerable merchants (i.e., the Arabs), and he ascribed to the Egyptians the invention and the introduction of bookkeeping to the Europeans [Heaps, 1895, p. 21]. This statement has merit because Europe at that time "was temporarily at a standstill, and we shall therefore not expect to find any visible or appreciable progress in methods of accounting during that period" [Woolf, 1912, p. 54].

The *Jaridah* as a specialized journal and a number of other accounting books were developed and used in the Islamic State. Although accounting books were developed after the establishment of the Islamic State and during *Addawlatul Amawi'iah* (Omayyed Caliphate), early Muslim historians refer only to the books used during *Addawlatul Abbasi'iah* between 132-232 H (750-847). The books that were developed in the Islamic State were of a functional nature and reflected the accounting spe-

cializations that were in practice at that time. In addition to the requirement of registering the accounting records, it was mandatory to number all pages before being used [Lasheen, 1973, p. 41]. The layout of the accounting records aimed at serving the specific function and roles performed by the relevant *Diwan*. Some of those common accounting books used in the Islamic State are described below.

Jaridah Al-Kharaj: This specialized book[16] was used to record a specific type of *Zakat* imposed on earnings from land, crops, and animals. Its layout was similar to the modern accounts receivable subsidiary ledger [Lasheen, 1973, p. 41]. It was indexed in alphabetical order for easy reference to needed accounts [An-Nuwairy,[17] n.d., Vol. 8, pp. 200-242]. The organization of *Jaridah Al-Kharaj* in alphabetical order indicates that the book contained a significant number of accounts and, hence, pages. The indexing of *Jaridah Al-Kharaj* was geographically based to facilitate the identification of collections made by the levy collectors, on the one hand, and to recognize the regional outstanding amounts of *Zakat Al-Kharaj*. This was of importance for the preparation and control of the budget of the *Wilayah* (sultanate/province). The recording in this book was based on *Kanoon Al-Kharaj*.[18] It shows *Al-Kharaj* liability of individuals and installments paid until the entire liability is settled [Al-Khawarizimi,[19] 1984, p. 81]. Each page of *Jaridah Al-Kharaj* had two columns and was assigned to one *Al-Kharaj* payer. The levy liability was recorded in one column and the payments in the other. The recording was in the form of debits and credits, but there is no evidence that terms analogous or etymologically similar to "debit" and "credit" were used.

Jaridah Annafakat (expenditures journal): This *Jaridah* was maintained by *Diwan An-Nafakat* (Department of Expenditures) for the expenses of the caliph (state). It was indexed in alphabetical order according to the nature of expenses incurred by the *Diwan*.. All expenses relating to the state were recorded in this *Jaridah* and were supported by relevant evidence.

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[16]It was also known as *Al-Awraj*.

[17]He was born in Egypt in 678 H (1280) and died in 734 H (1334).

[18]This is the law requiring the assessment and payment of *Al-khraj* (law of *Zakat* on land, crops, and animals).

[19]He wrote his book in the 10th century and died in 387 H (997).

Jaridah Al-Mal (funds journal): This *Jaridah* was maintained by *Diwan Al-Mal* (Department of Treasury) which was responsible for the receipt of *Zakat* and its payment. It was also a classified book that was supposedly classified according to the different types of *Zakat* received and their application in accordance with the requirements of the *Quran*.

Jaridah Al-Musadareen (confiscated funds journal): This Jaridah was maintained by *Diwan Al-Musadareen* (Department of Confiscation) [Lasheen, 1973, p. 41]. It was especially used for recording funds confiscated from individuals not complying with the requirements of *Shari'ah Islami'iah*. These included government officials who misused their position and authority.

The specification of these specialized *Jaridah* are dated back to the time of the fifth caliph, Omar bin Abdul-Aziz (Omayyed Caliphate), who lived between 61 and 101 H (681-720) and ruled from 99 H (718) to 101 H (720). "He was the first person to establish an autonomous department for each type of revenue" [Ibn Saad, 1957, Vol. 1, p. 400]. Furthermore, Omar bin Abdul-Aziz was the first caliph to make the issuance of receipts mandatory. He wrote to one of his assistants named "Zuraik," requiring him to issue a receipt for money collected [Imam, 1951, Vol. 1, p. 255].

Daftar Al-Yawmi'iah (daily book): This is an Arabic title, as is the case with most books. *Daftar Al-Yawmi'iah* was known as *Ruznamah* in Persia and in some other non-Arabic sultanates/provinces of the Islamic State. This *Daftar* is defined by Al-Khawarizimi [1984, p. 81] as "the daily book used to record expenses and other financial transactions associated with *Zakat Al-Kharaj*." This confirms the specialization of the books whereby *Daftar Al-Yawmi'iah* was used to record *Al-Kharaj* expenses, while *Jaridah Al-Kharaj* was used to record *Al-Kharaj* revenues as discussed earlier. It was a requirement that "recording in *Daftar Al-Yawmi'iah* should follow the date of occurrence and comply with prescribed recording procedures" [An-Nuwairy, n.d., Vol. 8, pp. 273-275]. Recording in the *Daftar Al-Yawmi'iah* was subject to the preparation of *Ash-Shahed* (journal voucher). The preparation of *Ash-Shahed* was the responsibility of the accountant and had to be approved by the head of the *Diwan* and the minister or his deputy before being used as the authority for recording in *Daftar Al-Yawmi'iah* [Lasheen, 1973, pp. 131-132]. The approval of the head of the

Diwan was of a technical nature while the minister's approval was administrative. The minister's approval was necessary for the purpose of control and accountability. Accordingly, *Ash-Shahed* was a vital document for it formed the accountant's authority for recording and was to be retained by the accountant for the purpose of auditing and accountability. The approval on *Ash-Shahed* is expressed by the phrase *Youktab* (to be recorded). For transactions conducted beyond the capital of the *Wilayah* (sultanate/province), it was necessary to send a copy of *Ash-Shahed* to the capital of the *Wilaiah* for recording in the central accounting books. The copy was stamped by the sultan of the *Wilaiah* and kept as evidence for recording in the central records. This implies that territorial records were also duplicated in the capital city where the sultan lived. Furthermore, this book and related documents were required to be kept in an organized manner and indexed in a way that allowed easy reference at any time after recording and filing were completed. Access to filed documents and closed accounting books was subject to certain conditions and procedures, including the approval of a senior staff member of the *Diwan* [Lasheen, 1973, pp. 147-149]. These recording, organization, indexing, and access procedures reflect the importance of *Daftar Al-Yawmi'iah* as the main reference, in addition to being the source for posting to subsidiary books.

Daftar Attawjihat (book of directions): Another book that was used to record budget expenses classified according to the type of activity and budget classification. This description makes it similar in nature to the modern general ledger. *Daftar Attawjihat* was used to control regional expenses and to ensure sultanate/province compliance with budget allocations and specifications. Two types of budgets were developed and used in the Islamic State. One was known as *Mukarrariyah* (operational/recurrent budget) and the other *Itlakiyyah* (discretionary budget). It seems that the *Itlakiyyah* budget was the one that could be departed from according to the discretion of the sultan or other authorized officials, while *Mukarrariyah* was to be adhered to strictly.

Daftar Attahwilat (book of transfers): This *Daftar* was also a classified book used for recording the transfer of funds between the *Wilayah* and the central government. It was maintained by each *Wilayah* within the Islamic State. The central government approved the budget for each *Wilayah* on the basis of *Zakat*

collections, payments, and transfers to or from the central government. Approval was regulated by several factors, including the *Wilayah Zakat* collections, population, geographical size, importance, etc. Information embodied in *Daftar Attahwilat* included such items as transfers to and from the *Wilayah* and revenues collected by the *Wilayah*. Accordingly, two books were maintained for budgetory control—the *Daftar Attawjihat* which was concerned with the control of expenses and the *Daftar Attahwilat* which was maintained for the control of revenues plus adjustments for deficits or surpluses. At the end of the financial year, the difference between revenues (*Daftar Attahwilat*) and expenses (*Daftar Attawjihat*) was extracted. The excess or shortfall was then transferred to or from the central government and recorded in the *Daftar Attahwilat*.

ACCOUNTING REPORTS

Financial reports were of prime importance in the Islamic State and were associated with control and accountability objectives. The development of financial reports was necessitated by *Zakat* and the formation of partnerships. From the perspective of *Zakat*, it was necessary to develop financial reports to reflect the results of operations and financial position for the calculation of the appropriate amount of *Zakat* payable. The development of these reports was also necessitated by the need of the active partners to account for their stewardship of the partnership, on the one hand, and the determination of the partners' share of *Zakat* payable on their portion of profit and asset appreciation if applicable. In all cases, *Zakat* was the turning point in the development of accounting generally and financial reports specifically.

Different types of accounting reports were developed and used in the Islamic State. They were prepared for various purposes and at different times, either as specified or as needed. The two common types of reports were known as *Al-Khitmah* and *Al-Khitmah Al-Jame'ah*.

Al-Khitmah: The *Al-Khitmah* was a report prepared at the end of each month which showed the totals of individual revenues and expenditures [Bin Jafar, 1981, p. 35]. It could also be prepared at the end of the financial year. *Al-Khitmah* is an Arabic word which means final or end [Al-Khawarizimi, 1984, p. 81]. It was similar to a modern-day monthly income and expenditure account. Although *Al-Khitmah* emerged as a government

monthly report, it would have been used by individual Muslim traders for the purpose of identifying their profits on a regular basis and, hence, for the calculation and payment of *Zakat*.

Al-Khitmah Al-Jame'ah: *Al-Khitmah Al-Jame'ah* is an Arabic word meaning comprehensive final report [Al-Khawarizimi, 1984, p. 82] and was prepared annually by the accountant and submitted to his supervisor. It showed the *Diwan's* itemized revenues, expenses, and surplus or deficit at the end of the financial year. If *Al-Khitmah Al-Jame'ah* was accepted by the head of department, it was called *Al-Muwafakah* (acceptance). If the report was not accepted for any reason, it was then called *Al-Muhasabah* (account) only [Al-Khawarizimi, 1984, p. 82] The word *Al-Muwafakah* indicated the acceptance or even the approval of the report balances by the head of the department. The nonacceptance of *Al-Khitmah Al-Jame'ah* was based upon the discovery of anomalies or the requirement for further justifications, clarifications, adjustments, or restructuring of the report's contents. *Al-Khitmah Al-Jame'ah* covered all financial activities of the relevant *Diwan*. It was a combined income statement and balance sheet because it included current and capital expenditure. Based on existing evidence, the concept of the balance sheet as a separate statement, as we know it today, was not common in the Islamic State.

The report that fits the requirement of *Zakat* for the use of individual Muslims reflects the income statement approach. However, some balance sheet items were included because of the *Zakat* requirement for assets to be revalued annually. The revaluation of assets was based on replacement cost for the purpose of determining profits, payment of *Zakat,* and protection of capital. The valuation process also required the specification and inclusion of liabilities. The use of the combined income statement and balance sheet is evident in the inclusion of accounts receivable, loans, transfers, and other balance sheet items in *Al-Khitmah Al-Jame'ah*.

For the calculation and payment of *Zakat*, debts were classified in the financial reports into three different classes according to their collectability. These classes were *Ar-Ra'ej Menal Mal* (collectable debts), *Al-Munkaser Menal Mal* (uncollectible debts), and *Al-Muta'adhdher Wa-Al-Mutahayyer Wa-Al-Muta'akked* (difficult, doubtful, and complicated debts) [Al-Khawarizimi, 1984, p. 82]. This classification of debtors was of significance for the protection of capital. It aimed at presenting

debtors in the most realistic collectability manner in order to avoid paying *Zakat* on income that may not be collected.

Figure 1 represents a literal translation of *Al-Khitmah Al-Jame'ah* based on cash transactions only. Its purpose was to report the financial status of the *Wilayah*. The figure shows the funds collected and their sources, in addition to the application of these funds during the financial year and the cash surplus at year's end. This report has some similarities with the modern-day funds statement. It is worthwhile to mention that the term "*Muhaseb*" (accountant) was not commonly used at that time, and the exact date of its use is as yet unknown. Different titles appear to have been used at different times. According to Al-Kalkashandy [1913, Vol. 5, p. 466], who lived between 756-821 H (1355-1418), "*Al-Amel* is the person in charge of writing and preparing the accounts. This title was originally assigned to the *Amier*[20] but at a later stage was assigned to *Al-Amel* only. . . . *Al-Sairafy* (cashier) is the one in charge of the receipt and payment of cash . . . and was previously known as *Al-Jehbed*" (emphasis added). *Al-Jehbed* was also the title given to the storekeeper [Al-Khawarizimi, 1984, p. 82]. It appears that the title *Al-Jehbed* was a common title assigned to the person who had custody over assets, especially cash, material, animals, etc.

CONCLUSION

Accounting records and reports were developed in the Islamic State over a period of time following its establishment in 622 and the imposition of the religious requirement of *Zakat* in 623. The development of accounting records and reports started in the year 2 H (623), with further maturation during *Addawlatul Abbasi'iah* (Abbaside Caliphate). The accounting records were of a functional nature, reflecting the functions performed by the *Diwans* in the *Wilayah* and the central government. A number of accounting records were developed to suit the needs of the state and individual Muslim traders. These records included *Jaridah Al-Kharaj*, *Jaridah Annafakat*, *Jaridah*

[20]The term "*Amier*" in *Shari'ah Islami'iah* is used to mean leader and not prince as it is commonly used today. It is a religious requirement as per the *Sunnh* to appoint an *Amier* whenever three or more people are engaged in any activity. The *Amier* could be the leader of the state as the case with the second caliph, Omar bin Al-Khattab, who was known as being the *Amier* of the believers. It could also be used for the person leading a group of employees at the work place or any other group of three or more persons in any activity.

FIGURE 1
Al-Khitmah Al-Jame'ah
In the name of Allah, the Most gracious, the Most merciful

Al-Khitmah Al-Jame'ah for Receipts and Expenses during the period *Muharram*[21] 1 to *Dhul-Hejjah*[22] 30, Year .... H

Prepared by ....., Assisted by ....., Supervised by ....., Approved by .....

Source of Funds				
	REVENUES FOR THE PERIOD			
(a)	Levies received from ....., date received .....,	XXX		
(b)	Other income,[23] its source ....., date received.....,	XXX		
	SUBTOTAL		XXX	
ADD				
(a)	Brought forward from last financial year	XXX		
(b)	Sales	XXX		
(c)	Reconciliations and Fines	XXX		
(d)	Loans	XXX		
(e)	Unclaimed Deceased Estate	XXX		
(f)	Transfers	XXX	XXX	
	Al-Fadhlakah (Total)			XXX
Use of Funds				
(a)	Transfers to other *Diwans*	XXX		
(b)	Purchases made by this *Diwan*	XXX		
(c)	Other Expenses	XXX	XXX	
Al-Hasel (Balance)				XXX

Source: Lasheen, 1973, p. 84

[21]first month in the Islamic calender

[22] last month in the Islamic calender

[23]This is a nonreligious levy. It represents income received by the state, such as donations, *Wakf* (philantropy) and other incomes allocated to the state either by individuals or by the central government. *Wakf* is normally established during the life of the person donating the *Wakf* or upon his/her will after death. The *Wakf* must be used and directed according to the instructions of the person donating it.

Al-Mal, *Jaridah Al-Musadareen*, *Daftar Al-Yawmi'iah*, *Daftar Attawjihat,* and *Daftar Attahwilat*. Furthermore, two financial reports were developed and used; namely, *Al-Khitmah* and *Al-Khitmah Al-Jame'ah*. These reports are similar in nature to the modern-day funds statement .

The type, layout, and names of some of the records used in the Islamic State are similar to those used in the Italian Republics. The commercial links between Muslim and Italian traders would have influenced the development of accounting records

in the Italian Republics. This influence is noticeable in the naming of the Italian primary book *"Zournal,"* which is the literal translation of the Arabic word *"Jaridah."* Further influence is apparent in the layout of some books, especially the accounts receivable subsidiary ledger and the classification of debts into three main categories as collectable, doubtful, and uncollectible. It is also possible that joint business ventures were established between Muslim and Italian traders that prompted the Italian traders to adopt the accounting and business practices of Muslim traders.

In conclusion, this paper argues that the development of accounting records and reports in the Islamic State have most likely contributed to the development and practice of accounting in the Italian Republics as documented by Pacioli in 1494. Further research into the accounting practices of early Muslims may reveal additional evidence of the development of other related issues in accounting and auditing.

REFERENCES

Al-Gazaly, A.H. (1980), *Ihya' Uloomud Dien* (Beirut: Darul Fikr), in Arabic.

Al-Kalkashandy, A.A. (1913), *Sobhul A'asha* (Cairo: Darul-Kutub Al-Khedaywi'iah), in Arabic.

Al-Khawarizimi, M.A. (1984), *The Keys of Sciences* (Beirut: The House of the Arabic Book), in Arabic.

Al-Mazendarany, M. (1363), *Risalah Falakiyyah Kitabus Siyakat* (Istanbul: Ayasofya Library, MS No. 2756), in Turkish.

An-Nuwairy, S.A. (n.d.), *Nehaiatul Erab Fi Founounel Adab* (Cairo: Egyptian General Organisation for Authorship and Publication), in Arabic.

As-Saleh, S. (1982), *Islamic Systems: Their Establishment and Development* (Beirut: Darul Elm Lil-Malaien), in Arabic.

Ball, W.W.R. (1960), *A Short Account of the History of Mathematics* (New York: Dover Publications).

Bin Jafar, K. (1981), *Al-Kharaj Wa Sina'at Al-Kitabah*, commentary by Al-Zibet, M.H. (Baghdad: Dar Ar-Rasheed Publishing), in Arabic.

Brown, R.G. and Johnston, K.S. (eds.) (1963), *Paciolo on Accounting* (New York: McGraw-Hill Book Co., Inc.).

Chatfield, M. (1968), *Contemporary Studies in the Evolution of Accounting Thought* (Belmont, CA: Dickenson Publishing Company).

Encyclopedia Britannica (1993), 15th ed. (Chicago: Encyclopedia Britannica, Inc.).

Have, O.T. (1976), *The History of Accounting* (Palo Alto, CA: Bay Books).

Hawary, M. (1998a), "Management in the Islamic State," *AL-Kabas*, No. 6108, May 12, in Arabic.

Hawary, M. (1998b), "Management in the Islamic State," *AL-Kabas*, No. 6115, May 19, in Arabic.

Heaps, J.W. (1895), *The Antiquity of Bookkeeping: An Historical Sketch* (London: Gee and Co.).

Ibn Khaldoon, A. (n.d.), *Mokaddamat Ibn Khaldoon* (Beirut: Dar Aljeel), in Arabic.

Ibn Saad, M. (1957), *At-Tabakat Al-Kubra* (Beirut: Beirut House for Printing and Publishing), in Arabic.

Imam, M. (1951), *Al-Mawta*, commentary by Abdul-Baki, M.F. (Cairo: Dar Ihia Al-Kutob Al-Arabi'iah), in Arabic.

Lasheen, A. (1973), *Al-Tandheem Al-Muhasaby Lil-Amwal Al-Ammah Fil-Islam*, M.A. thesis, Al-Azhar University, Cairo, in Arabic.

Quran (1996), Madinah Munawwarah, Saudi Arabia: King Fahd Complex for the Printing of the Holy Quran.

Shahata, H. (1993), *Usoolul Fikr Al-Muhasabi Al-Islami* (Cairo: published by author), in Arabic.

Woolf, A.H. (1912), *A Short History of Accountants and Accountancy* (London: Gee and Co.).

Zaid, O.A. (1997), *The Historical and Theoretical Framework of Financial Accounting in the Muslim Society*, 2nd ed. (Amman: Darul-Bashier).

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KNOWING MORE AS KNOWING LESS? ALTERNATIVE HISTORIES OF COST AND MANAGEMENT ACCOUNTING IN THE U.S. AND THE U.K.

Abstract: In attempting to understand the genesis and scope of modern cost and management accounting systems, accounting historians adopting what has been labeled a "Foucauldian" approach have been rewriting the history of key 18th and 19th century developments in the U.K. and U.S. through new evidence, new interpretation, and a refocusing of attention on familiar events. This is a "disciplinary" history which sees modern cost and management accounting as articulating a new kind of "expert disciplinary knowledge," as well as exercising a "disciplinary power," in the construction of a new human accountability. However, this "disciplinary" view has been challenged by more "economic rationalist" historians, e.g., Boyns and Edwards [1996] for the British Industrial Revolution and Tyson [1998] for the U.S., as being too narrowly concerned with labor control.

This paper takes up the gauntlet. It addresses the theoretical issues and seeks to clarify the import of the "disciplinary view" and its contribution to understanding how 19th century accounting practices shaped emerging managerial discourses, initially in the U.S. It argues that, until businesses adopted this new disciplinarity, there remained an absence of practices focused on calculating human performance, and accounting was not fully deployed to construct that system of "administrative coordination" [Chandler, 1977] which distinguishes modern management action and control.

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INTRODUCTION

We are always rewriting the past, whether through new evidence, new interpretation, or a new focus on old overlooked events. Revisionism constitutes something newly read into some particular aspect of the past—a discovery of new evidence, a discerning of new patterns, a dislodging of old and cherished verities. But what is the knowledge gain? In the flux of such rewriting, and in the contest of ideas it necessarily entails, the quality of the new evidence and the plausibility of the supposed patterns discerned cannot but be questioned. Knowing more may disintegrate into knowing less; the loss of the cherished appraised as too high a price to pay.

We surmise that this is very much the situation currently with the history of cost and management accounting developments in the U.K. and U.S. during the late 18th and early 19th centuries. Authors such as ourselves, so-called "Foucauldians,"[1] are caught up in just such a proliferation of rewriting. In our own view, we are caught in the process of refining and redefining Chandler's [1977] "visible hand" thesis at all three abovementioned levels—evidence, interpretation, and refocus.

First, we have added to the evidence that Chandler adduced for the genesis of modern management by revisiting the sites he identified where forms of administrative coordination were first developed. Chandler specified the Springfield Armory as the place where single-unit management was developed in the context of developing interchangeable-part manufacture, largely under the superintendency of Roswell Lee. We agree on the location, but find that administrative coordination was developed not as a response to the technical breakthrough but as a separate "disciplinary"[2] intervention. Further, credit is ac-

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[1]This identification is an oversimplification as in certain key respects we depart from Foucault's own history or go beyond his own analysis of disciplinary practices, discourses, and institutions.

[2] "Disciplinarity" as we use it refers to new modes both of knowing and of exercising power, where the same set of practices—writing, examining, and grading—are involved in constituting both. Once these practices were translated into business, they enabled a constant tracking of performance, setting of targets, evaluation against norms, etc.—all of which became most powerful when internalized. Thus, a new kind of work control environment developed within hierarchically networked organization structures. So disciplinary power is grounded in the application of expert disciplinary knowledges. Our "disciplinary" approach therefore does not see modern business as a response to specifically economic demands, let alone explicable in terms of a calculus of economic costs and benefits. See further Hoskin and Macve [1986, 1993].

corded not to Lee but to Daniel Tyler, whose systematic work study in 1832, "watch in hand," both identified the time that *ought* to be taken for each task in musket production and reengineered that production process as one of consecutive steps to be followed with minimal bottlenecks. The implementation of the Tyler-based approach from 1841 produced a new, managed manufacturing system [Hoskin and Macve, 1988, 1994a].

As we then pointed out, the practices deployed by Tyler in managing the production system—turning all performance into writing, subjecting it to close examination, and grading the outcomes—initiated a world where targets and results were endemically produced from the past into the future. These became internalized by being integrated into coordinated systems of activities, with individuals often provided piece-rate incentives and governed by strict factory time keeping. This analysis we then applied to Chandler's [1965, 1977] story of how multiunit management was developed on U.S. railroads [Hoskin and Macve, 1994b]. Here again we saw administrative coordination as developed through the application of these practices to the problems of planning, coordinating, and controlling plant and personnel across extended space and time. We, like Chandler, saw the first key player as George Whistler on the Western Railroad, identified by Chandler [1977, pp. 97-98] as the first (in 1841) to adopt a "modern, carefully defined, internal organizational structure," making it "the first American business enterprise to operate through a formal administrative structure manned by full-time salaried managers." The second key railroad was the Pennsylvania (PRR), where the separation of financial and operating functions was achieved, leading in 1857 to the establishment of what Chandler [1977, pp. 105-106] called the first "decentralized line-and-staff divisional form of organization." Also, the continuous generation and examination of detailed information flows on both physical and human assets enabled a low-cost, high-efficiency regime to be established. "Of all the organizational innovators . . . the Pennsylvania Railroad made the most significant contributions to accounting" [Chandler, 1977, p. 109].

In all this, we were following Chandler's evidential trail, but as we undertook our own searching of the archives we found new primary sources of evidence.[3] We were able to track down

[3]The researches of O'Connell [1985] and Ward [1971] were also of valuable assistance. See Hoskin et al. [1998].

the details of Tyler's original work, to study first-hand his autobiography, and to trace the inscription of the implementation of his reforms in the Springfield Armory's payroll records held in the U.S. National Archives. We could show that Whistler implemented the new organization structure on the Western in 1839, not 1841, from day one of the railroad's operation. We could also challenge Chandler's view [1977, p. 101] that the "general principles" of administration were established and that "the flow of internal information" was first perfected on the New York and Erie Railroad around 1854-1855, as what appeared to be substantially identical innovations had already been introduced on the PRR. On the PRR itself, we disputed Chandler's identification of J. Edgar Thomson as the key player and argued for the role of Herman Haupt as the originator of the significant changes in 1851. As we have further argued [Hoskin et al., 1998], Haupt's contribution also included the first known example of an information-rich approach to strategic thinking, visible in proposals and initiatives from 1853-1854.

Thus, we began to rewrite Chandler's general explanation. In particular, where he saw single and multi-unit management as two distinct developments, we could see them as two aspects of a more general breakthrough. First, we could point out how both sets of developments in administrative coordination were achieved by people with a common past since Tyler, Whistler, and Haupt were all graduates of the U.S. Military Academy at West Point.[4] Second, we could suggest that this common past was decisive, not so much because of its military context but primarily because of the radically new pedagogic environment experienced by these West Point cadets. The "disciplinary" practices involved in both kinds of administrative coordination—constant writing, examining, and grading—were introduced into West Point by Superintendent Sylvanus Thayer, appointed to run the Academy in 1817, when both Whistler and Tyler were cadets in the same cohort.

These young men encountered a radically new learning en-

[4]Chandler recognized that there were West Pointers in the story and acknowledged the value of their engineering training. However, he overlooked how they had "learned to learn" under Thayer's new, disciplinary system [Hoskin and Macve, 1988], particularly when he focused on the New York and Erie Railroad and on J. Edgar Thomson rather than Herman Haupt on the PRR. As he viewed their input as marginal and secondary, he reserved the invention of "management" to career businessmen.

vironment which was newly disciplinary in a double way. First, they were subjected to the new discipline of constantly being made to write, and to be examined and graded on the results of their writing, and thereby were made subject to a panoptic system of surveillance and judgment. Constant record keeping on each and all, continuously defining their status as measured by their performance, was internalized in their competition for the highest rank. Second, they were constrained to acquire a new and superior expert disciplinary knowledge, based on studying the works of the French instigators of modern mathematics and science. These West Pointers were the vanguard of the first U.S. generation to become mathematically and scientifically literate. They were well-disciplined, disciplinary experts. Thus, we see the invention of administrative coordination as simultaneously an outcome of remaking humans as highly literate and numerate disciplinary experts, "calculating persons" perhaps, who could then apply their disciplinary knowledge to the coordination of objects, processes, and humans. This is a powerful new knowledge system because it is a knowledge-based way of exercising power. That is the power-knowledge interrelation.

Accounting is a significant factor in this transformation to administrative coordination because it was already there at hand, functioning in existing economic practices in various ways. Double-entry and charge-discharge accounting systems already put values on objects in problematic yet familiar ways. With the translation of writing, examining, and grading practices into the economic sphere, an historically new extension of accounting practice and knowledge occurred. The performance marks of West Point became the performance dollars of accounting. Accounting began to become newly disciplinary in the same double sense, as it was extended from being an accounting for objects or the best use of objects to a concomitant accounting for human performance, including a new kind of decision making concerned with the best joint use of human and physical assets within a defined organizational structure of accountability. Once forms of what we have called "human accounting" began to become integral to the accounting field, accounting as knowledge discovered its modern status as a discipline in its own right [Hoskin and Macve, 1993].

Thus, a new power accrued to accounting, but only because aspects of accounting remained the same. From Roman times and earlier still [Macve, 1985], as later in double-entry and charge-discharge formats [Hoskin and Macve, 1986], accounting had been a practice that turns events into writing, renders

them open to examination, and puts values on events and objects. In this respect it continues to remain the same, but at the same time it gains a new significance because it expands so effortlessly to take on the "human accounting" dimension. We then identify, as one precipitate of this expansion, a new discourse of accountability. As we have pointed out [Hoskin and Macve, 1988], accountability is a neologism of this general period. We find a reference at Springfield in 1819 to the "system of accountability" to refer to the proper stewardship of objects. But the expansion of accounting to incorporate human accounting leads to the term taking on its modern connotation of a general and human accountability. It becomes a term whose scope goes beyond being held responsible to identification through accounting norms as being responsible. Moreover, as new expertise in the technology of value calculation is created, one can also be called to account for what is yet to come, which is now nameable through prediction or prescription.[5]

In this respect we believe we have captured precisely what Chandler set out so forcefully in the introduction to *The Visible Hand* [1977]; namely, that modern management was a rupture in economic history. It displaced the power of market mechanisms by inventing a new kind of institution, the managed entity or modern business enterprise. By capturing cost and efficiency benefits internally and enabling a planning and coordinating of activity across time and space, often by "fiat" [Coase, 1937], the managed entity preempted, displaced, and fundamentally remade market relations. Managerialism engendered oligopoly because it was so feasible, via administrative coordination, to construct large organizations where managers manage other managers. Such organizations proved able to generate such economic rents that they could dominate and remake their sectors, even as they dominated and remade their work forces. Administrative coordination was, in this sense, a new kind of power, which has ultimately remade the parameters of the economic and organizational worlds.

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[5]None of this says that accounting was not significant before, nor that individuals were not judged before through their accounts. But these were traditionally prominent people already identified as significant individuals before the accounts were prepared. Such stewardship accounting dates from ancient practice, through medieval estate accounting, to modern times. What is different about the new human performance measurement is that it created "calculable persons" within mass populations [Hoskin and Macve, 1986; Miller and O'Leary, 1987].

In our view, Chandler's radical insight has become distorted as his work has been claimed by others as an historical basis for approaches such as transaction cost economics [Williamson, 1985]. We aim to reassert Chandler's radical insight, captured in the "visible hand" metaphor, by emphasizing how the invention of administrative coordination was not, as such, an economic invention.[6] It was, as a combination of writing, examining, and grading, a means to inventing a new kind of economic world.[7]

Our theoretical concern then is to give back to the theory of the visible hand both its metaphorical and substantive force. But, of course, such a rewriting occasions questions and disputes over the evidence, the adequacy of the theorizing, and the refocusing of debate. Thus, the issues of the early 19th century period, and of the relative significance of U.S. and U.K. developments, have been posed in acute new ways. Much valuable new evidence has accrued as a result, something we welcome. Further, the precise delimitation of terms such as "management" has come in for searching question [cf. Hoskin and Macve, 1990]. The roles of accounting in business and in non-business contexts have been seen as multiple. New levels of analysis have therefore proliferated as part of that general rewriting to which we have contributed.

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[6]Chandler [1977] himself did not believe that the new levels of administrative coordination introduced into the Springfield Armory and the early U.S. railroads could be explained by economic rationalism as they were introduced primarily by salaried managers rather than entrepreneurial owners, and their sophistication went beyond what was needed for adequate coordination of business activity and for economic survival.

[7]In this world, there are arguably three key precipitates, each of them a direct product of the new combination of disciplinary practices. First, there is a new form of the "subject" or self, as the calculable/calculating person. Second, there is a new form of "organizing," as a process of reticulation or networking. Here constant writing, examining, and grading make possible the hierarchical and accountable connection of subjects and groups of subjects into entities that therefore seem made up of interconnected parts. Third, yet concomitantly, comes the regime of information as a precipitate of our "grammatocentrism." In our organizations as much as ourselves, the secondary rewriting of events, acts, and objects becomes increasingly primary. From the topmost manager to the lowest managee, working life is directed and shaped via the circulation of multiple narrative and calculative texts. Decision is translated into a choosing from among the set of written, examined, and graded alternatives at hand. We therefore find profoundly problematic any theory that takes as its objects of analysis the subject as rational, the organization as structure, and information as objective.

In particular, historians representing the "neoclassical revisionist"[8] or "economic rationalist" school of thought have established more clearly that elaborate accounting reports were prepared in U.S. private enterprises from the early 19th century, such as at the Waltham-Lowell mills [Tyson, 1998] and later at Waltham Watch [Fleischman and Tyson, 1996]. They were equally found in major industrial enterprises in Britain [Edwards et al., 1995; Boyns and Edwards, 1996, 1997a, 1997b; Fleischman and Parker, 1997]. Such accounting reports served management decision making in these sites, they argue, and entities became coordinated into increasingly large-scale industrial enterprises, in developments that they see as rational economic responses to the demands placed on management by technological innovation and economic growth.

Economic rationalist historians, based on archival evidence from the U.K., attempt to demonstrate the utilization of an array of accounting practices that still form part of the accountant's portfolio of techniques today. Accounting was a vital ingredient in contractual arrangements between owners, whether among the partners in a firm or in organizing and monitoring the operation of owners' cartels. It informed managers' concerns with expenditure control, with evaluating technical efficiency improvements through increased mechanization, and with major operational expansion/contraction decisions. Recent evidence from significant British Industrial Revolution (BIR) industries, such as Boulton & Watt's Soho Foundry, the Dowlais mining/ironworks complex, and the Northeast collieries [Fleischman et al., 1995; Boyns and Edwards, 1996, 1997a; Fleischman and Macve, 2000], has reinforced the evidence from the work of earlier historians [Stone, 1973; Jones, 1985] as to the variety of accounting's contractual and managerial roles. It also has contributed to refuting Pollard's oft-quoted conclusion [1965, p. 248] that "the practice of using accounts as direct aids to management was not one of the achievements of the British industrial revolution."[9] Consequently, these researchers would argue that the prime focus of research into the management accounting history of this period should be on investigating this variety of ways in which modern

[8]For the content of "neoclassical revisionist" history, see Loft [1995].

[9]Some guarded recognition of the significance of this new evidence is given in Wilson's [1995, pp. 29-31] synthesis of British business history.

accounting practices developed, to meet the demands of a range of organizational objectives under varying conditions.[10]

It has not been our purpose to deny the sophistication of the accounting practices developed in the BIR; indeed, they offer some of the earliest exemplars of the range of accounting practices also found in early industrial enterprises in the U.S. and elsewhere. But, given the disciplinary framework of analysis we have adopted, we would argue that the extension of such modern accounting techniques does not in itself explain the fullness of modern accounting's power. Instead, one must address the question posed by Miller and Napier [1993, p. 632] of "the extent to which 'successful' accounting methods transform the entities and practices of which they provide a calculative knowledge." The issue, we suggest, is to identify how far there is an integration of the accounting into the disciplinary nexus of practices.

As specific subquestions, one may ask, how far does organizing as reticulation in the sense of constructing networks of individuals and spaces for decision making, action, and creation of corporate identities become endemic? How far does the population of organizational selves become calculable and calculating? How far is there a privileging of information as objective? These, we suggest, are the key features of the new economic world of the modern business enterprise. Only in this context does accounting, we suggest, develop its distinctive modern power and status as a valuing technology, via its objectification, classification, and surveillance of human performance.[11] This is why we have seen the crucial historical question, the crux, for historians of management accounting as the identification of sites where and when human accounting was initiated. Demonstration of accounting's presence and useful-

[10]For example, Fleischman and Parker [1991] rated historical management accounting practices along four dimensions: cost control, overhead accounting, decision making, and standard costing.

[11]Thus, do we enter the world of which Miller can say, "Far from being neutral devices for mirroring the social world, the calculative technologies of accountancy are complex machines for representing and intervening in social and economic life. Along with allied expertises, the creation of calculating selves and calculable spaces enables a normalization of individual lives that is cast in financial terms. The visibility conferred on the calculating self who occupies a specific locale within a loosely assembled network of calculable spaces is intrinsically linked to norms of financial performance. Ways of organizing and ways of calculating have developed hand in hand" [Miller, 1992, pp. 78-79].

ness in other ways, traditional or new, while important, is no longer enough.

In spite of a growing fashion for accepting pluralities of theoretical approaches and of methodologies in accounting history research [Carnegie and Napier, 1996; cf. Oldroyd, 1999], we find that a number of recent papers have directly attacked our own theoretical arguments and interpretations of evidence and charged that we have misread and misunderstood the historical significance of a variety of 19th century accounting developments. We therefore now turn to face our critics and review the evidence so far obtained from the archives of a number of significant early BIR and U.S. organizations. We continue to maintain that, despite a variety of conditions, no evidence of the application of our type of human accounting has yet been found in the U.K. at the time when such a development is observable in certain seminal organizations in the U.S. Nor is that development explicable within the U.S. in non- or antidisciplinary terms. On the contrary, even where the evidence at first appears to lead elsewhere, we argue that it actually proves to reinforce the disciplinary explanation of modern management's genesis.

Of course, a proviso must be offered. We recognize that archival evidence alone can never enable us to resolve the debate between the neoclassical revisionist and Foucauldian perceptions of the processes by which modern accounting and modern management evolved.[12] Our thesis remains as subject to falsification by evidence yet to come as any other. An accumulation of such evidence therefore remains essential in order to enable us to piece together more of the jigsaw of our theoretical understanding of how such developments occurred.

The structure of the rest of the paper is as follows. The next section sets out our concerns over the adequacy of conventional economic rationalist analysis as a sufficient explanation of the development of accounting's modern power. We also indicate briefly how our approach may be seen as relating to the recent

[12]The cases of Boulton & Watt, Dowlais, the Northeast coal mines, and other BIR firms examined to date constitute only negative archival evidence in the matter of a possible U.K. breakthrough to managerialism. We see U.S. cases such as the Lowell-Waltham mills in a similar light [Hoskin and Macve, 1996], to be distinguished from sites such as the Springfield Armory and certain early railroads in the matter of where and when the breakthrough was made.

work on U.K. and U.S. developments. We then focus in following sections on historical works that have directly or indirectly attacked our evidence and/or framework. We note here that we are frequently criticized for being too narrow, in particular for focusing purely on labor productivity or standard costing. We hope it is clear from the theoretical discussion above that this is not our general concern. At the same time, we recognize that there have been papers [e.g., Hoskin and Macve, 1994a, 1996] where we have focused on demonstrating specific aspects of our case, such as the details of management's development at the Springfield Armory, which may have led this part of our analysis to be taken as an adequate proxy for the whole. Subsequently, we provide brief responses to the critique put forward in some of the major recent papers and books by Boyns and Edwards, and by Tyson in sole-authored and joint papers, concerning our interpretation of historical developments. We then consider how our theoretical approach might be reconciled with the views expressed in surveys of recent work in accounting history, such as those of Miller et al. [1991], Stewart [1992], Miller and Napier [1993], Loft [1995], Carnegie and Napier [1996], Fleischman et al. [1996], Funnell [1996, 1998], and Oldroyd [1999]. We offer a brief summary of our conclusions on the debate so far. The concluding section sets out our view of the priorities for further research into the paths by which the networks that transmitted the "new" 19th century accounting were extended, apparently first in the U.S., subsequently in the U.K. and Europe, and now increasingly globally. Accounting's history must be rewritten so that we and other researchers, while discarding some currently cherished knowledge along the way, will indeed arrive at "knowing more."

ECONOMIC RATIONALISM: AN INSUFFICIENT EXPLANATION OF ACCOUNTING'S ROLE IN THE HISTORICAL DEVELOPMENT OF BIG BUSINESS

The economic rationalist view of accounting's history over the last quarter of this millennium offers an appealingly simple, functionalist account of technical response to the changing economic demands of the industrial revolution and the rise of big business. By Occam's razor, we should avoid elaboration of more complex explanations if a simple one will do. Why is the economic rationalist explanation unsatisfactory? There are three interconnected levels at which it must be challenged—the theoretical, the evidential, and the historiographical.

The Theoretical Level: The new accounting practices of the 18th and 19th centuries are argued by our critics to have provided necessary tools for management decision making and coordination of increasing complexity in new industrial revolution and managerial revolution firms. Others who have evaluated the practices of routine cost accounting from the perspective of economic theory, in particular its handling of the rapidly escalating burden of fixed costs that characterized the economics of the increasingly capital-intensive operations of these firms, have long condemned these routine practices as inadequate, if not downright inappropriate, for supplying the information needed by owners/managers for optimal allocation of resources. Particular culprits are the calculation of depreciation cost, the abandonment of the calculation of implicit interest cost, and, more generally, the arbitrary allocation of fixed overhead cost, driven by an emphasis on calculating average actual unit costs of products. Past total unit costs are themselves of little relevance to, and indeed may distort, rational decision making [Coase, 1938; Wells, 1978; Johnson and Kaplan, 1987; cf. Boyns and Edwards, 1997a].

Such theoretical critiques of accounting practice are themselves largely founded in theoretical neoclassical economics and a model of decision making that is atomistic and choice-theoretic, concerned with "constrained optimisation" [Jones, 1997]. However, more recent institutional versions of this rational economics, as applied to the new, large 19th century firms, do focus more on the relative transaction costs (more generally, information costs) of economic coordination through firms rather than markets [Casson, 1997]. They also address the particular strategic capabilities that provide individual firms with competitive advantage, whether they be innovators or established firms [Best, 1990; Kay, 1993]. These capabilities are argued to include a firm's particular structural architecture, the appropriate balance between formal, internal rules and organizational routines, on the one hand, and the flexibility needed to innovate and adapt to change on the other.

This line of economic analysis opens up a role for accounting routines in facilitating the construction and monitoring of activity both internal and external to business organizations. For more mainstream economists, the focus here is on how accounting assists with the construction and monitoring of the nexus of contracts, both formal and implicit, that is their heuristic model for the analysis of the economic structure of busi-

ness organizations [Coase, 1937; Jensen and Meckling, 1976; Williamson, 1985].[13]

This literature of transaction cost economics focuses primarily on analyzing the optimal equilibrium organizational structure, given *inter alia* the potential benefits and costs of alternative information systems. It has little if anything to say either about the processes by which firms emerge, grow, and survive/decay, or about the observed variety of organizational forms at different times and in different countries [Perrow, 1986; cf. Best, 1990; Casson, 1997; Jones, 1997; Gwilliam et al., 2000]. Nevertheless, it has enabled the forging of a strong link between economic theory and business history, as its theorization of the inevitability of large industrial firms [Williamson, 1985] fits with Chandler's [1990] history of the 19th and 20th century growth of the U.S. managerial firm, ultimately represented by the multidivisional, multinational "M-form" business.[14]

A significant criticism, however, of all current accounting history, both traditional and new, would be its relative lack of reciprocal success to date in penetrating the core of modern organizational theorization. While some historians, in addition to Chandler, have begun to recognize accounting's significance as the ideal of modern administrative efficacy in connecting the world to what Latour [1987] has called "centres of calculation" [Porter, 1995, pp. 50-51], there has been little identification in mainstream management texts of the importance of accounting practices in contributing to alternative approaches to the design of organizational strategy and structure. As argued recently by Boyns and Edwards [1997b], the conventional wisdom in U.K. business history persists in concluding that there was little in the development of cost and management accounting techniques in U.K. businesses that has been shown to be significant to the development of those businesses before the end of the

[13]This analysis is also consistent with recent theoretical research on accounting's role in facilitating incentive-compatible contracts for managers within an agency theory structure, focusing on the conflicting objectives of organizational participants [e.g., Feltham and Xie, 1994; Gietzmann, 1995; Wagenhofer, 2000]. It is also consistent with the traditional historical importance of audited accounting reports in monitoring stewardship, partnership, and other agency contracts, as well as linking to accounting's more modern external roles in relation to capital markets and regulatory compliance.

[14]We discuss critiques of Chandler's thesis in the historiographical section below.

19th century, despite increasing recognition in recent years of the work of economic rationalist accounting historians (e.g., Boyns and Edwards themselves and Fleischman and Parker).

The challenge therefore remains to develop the theory of how business accounting became powerful, in such a way as to persuade skeptical, mainstream business and economic historians that an understanding of accounting is vital, if not central, to their own agendas. An heroic challenge [Hoskin and Macve, 1993; cf. Napier, 1996a, 1996b]!

Under a transaction or information cost approach, it may be argued that cost and management accounting routines conferred comparative advantage on those businesses that adopted them as compared with those that did not, even though they were suboptimal.[15] Thus, the arguments of Coase [1938] and Wells [1978] might be theoretically correct but not relevant. However, economic rationalists could only argue that suboptimality would have been consciously preferred to optimality *ex ante*, if decision makers would also have been able to evaluate *ex ante* the likely costs and benefits of differing degrees of sophistication in potential accounting calculations. This seems implausible.[16]

A more plausible version of this theory, as in Boyns and Edwards [1996, 1997a], is that the accounting routines found in the archive emerged as an intensification, modification, or byproduct of existing routines used for other purposes. If subsequently found to confer some economic advantage, even if not ideally suited for the purpose, what began as supplementary to economic management increasingly became central.[17] Then *ex post,* the costs of moving from existing suboptimal procedures to more sophisticated procedures may have appeared as prohibitive and imposed a path dependency that constrained the final outcome.

However, it would be theoretically much more compelling to identify first what led to the original adoption of those pre-

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[15]This argument is advanced by Tyson [1998] although it is not developed there.

[16]A similar objection may be made to the idea that firms are able to evaluate *ex ante* the relative transaction costs of firm versus market organization as posited by Coase and Williamson [Jones, 1997].

[17]By extension such routines could be suboptimally useful for a number of purposes, albeit ideally suited to none. Such an explanation resuscitates Derrida's [1976] idea that there is a "logic of the supplement," as discussed in Hoskin and Macve [1993].

cursor routines, and to investigate whether their adoption related to some other organizational, social, or economic changes, and only then to consider what particular changes in internal conditions provided the opportunity for their successful modification. This has been a focus of our own agenda.[18] Given that wider explanatory frame, economic rationalists might then wish to demonstrate, by analogy with evolutionary biology, how modified or intensified suboptimal practices did actually contribute a new economic advantage, and why, where they then remained in place, they were not in turn replaced by further superior alternatives.

But to say, as they tend to, that the routines found in the archive must have represented the optimal trade off of costs and benefits (given the decision-making and other uses that economic rationalists wish to attribute to such routines) is empirically empty and essentially tautological. What is still generally missing is an historical explanation for why particular routines and their subsequent modifications were the ones that were actually chosen and why consideration/experimentation was not given to possible alternatives that may have been even more cost-beneficial [Casson, 1997].[19]

The economic rationalists identify the adoption of cost and management accounting routines with the provision of information for improved decision making. But how are these to be linked? By way of illustration, take, for example, an accounting information signal, such as "cost" or "profit," that is correlated, albeit imperfectly, with the "true" economic performance of the item of interest. The calculation of the measure signaled may originally be a byproduct of some other accounting routine; e.g., the maintenance of double-entry records for the purpose of basic accountability over resources [Yamey, 1949]. Such a signal may be superior to no information, or to less well-correlated signals. But if the signal is still very "noisy," it is only likely to be advantageous for decision making on average; e.g., where there is a routine repetition of decision outcomes, as in continuous statistical quality control of an operational process.

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[18]For example, Hoskin and Macve [1996] argued that the use of precise, but arbitrary, unit costings at the Waltham-Lowell mills emerged from the steps needed to perform calculative routines, and from the need to check their accuracy, in an age of calculation by hand. Tyson's [1998] critique of this paper is discussed further below.

[19]Oldroyd [1999] pointed out the force of "inertia." However, we also need an explanation for the historical changes that do occur.

Accounting certainly can and does provide such statistics. Such a noisy signal will, however, generally be of little value for the major, more strategic decisions on pricing, output, and scale of investment and on fixing performance rewards. The latter has been the major focus of economic rationalist historians in arguing for the importance of 19th century management accounting developments [Boyns and Edwards, 1997b; Tyson, 1998]. Yet, accounting routines for the reporting of costs and profits are generally regarded as *extremely* noisy [Edey, 1970].

This noise further implies that, given the existence of increasingly standardized accounting routines, the comparative advantage, *ceteris paribus*, will lie with those firms that understand how to use them to best advantage,[20] or how best to combine them with other sources of information. This in turn means that the focus of archival enquiry needs to be as much on the material that provides insight into the contexts within which these accounting systems were employed and interpreted, as it does on the evidence of the accounting records themselves. This kind of approach is consistent with those organizational theories that see the secret of successful architecture in the balance of routine/nonroutine and formal/informal systems [Kay, 1993; Casson, 1997]. We discuss these issues further in the next sections on the evidential and historiographical levels.

The Evidential Level: The argument here can be stated briefly. It is not generally possible to deduce from the existence of the routine, formal accounting records themselves the purpose or purposes to which the information was put.[21] As will be discussed further below, even economic rationalists generally have to admit that, while they (like us) can produce evidence of an impressive array of increasingly complex, routine cost accounting records, both in the U.K. and the U.S., they are generally only able to suggest how the information could potentially have

[20]The history of cost accounting is replete with examples of situations where divisions, processes, or products appeared unprofitable under the basis of overhead allocation adopted, so that the management wisely changed the basis [Wells, 1978, p. 84].

[21]This contention lies at the heart of much of Yamey's work in demolishing the claims of those who have seen the emergence of double-entry bookkeeping in the 13th century as an essential tool of a new "rational capitalism" [Yamey, 1949]. Similar skepticism needs to be applied to the accelerating emergence of elaborate cost accounting records in the 19th century.

been utilized [Tyson, 1992, 1998; Boyns and Edwards, 1997b]. The major exceptions, of course, are 1) those records that explicitly compute future outcomes, which can only have been prepared in the context of decision making or negotiation, and 2) those records that were clearly prepared as the basis for contractual negotiations or *ex post* settling up.

Apart from these clear exceptions, the existence of the formal records of past performance, normally identified with double-entry accounting ledgers and supporting analyses, do not in themselves help us to deduce the internal management purposes for keeping them. How they were used is also problematic, other than very broadly as a potential statistical data base from which data might be extracted and/or extrapolated for estimates of future outcomes and *ex post* checks on actual outcomes as, for example, at Dowlais [Boyns and Edwards, 1997a]. But accounting is much more than useful statistics. If it were not, it is hard to understand how it developed so dramatically beyond being just one more of the tools in the manager's toolkit, providing the basis for the emergence of a much more highly rewarded, stand-alone profession [Matthews et al., 1998].

In summary, one must remember the old historian's maxim. When one is reduced to arguing "it is likely that . . . " or "there can be no doubt that . . . ," one generally means "there is no evidence that . . . "

The Historiographical Level: While Chandler's history has been contested as an explanation for the growth of firms outside the U.S. [Hannah, 1983, 1991; Jones, 1994], it represents what is now the conventional template for describing and explaining the relative growth of big business on both sides of the Atlantic [Payne, 1988; Schmitz, 1993]. It has also been used by Boyns and Edwards [1996] as a framework for exploring the role of accounting systems in the development of complex business enterprises, such as Dowlais in the 19th century in the U.K.[22]

Even within this historico-theoretical account of the construction of large business organizations, the role and significance of routine cost and management accounting practices remain problematical. Both the economic rationalist and disciplinary frameworks of accounting history, in so far as they

[22]However, in Boyns and Edwards [1997a] they argued against a Chandlerian explanation of developments at Dowlais in the 1850s.

build on Chandler's pioneering work, emphasize the value of the new routines of accounting among the range of practices which characterize the emergence of the new managerial firms. Here managers control other managers and ultimately, in an increasingly global environment, top managers are themselves controlled not by individual, entrepreneurial owners, but by the corresponding managerial hierarchies of financial institutions, competitors, suppliers, auditors, and/or regulators. All of these are subject to ever-increasing internal and public accountability. Their decisions and actions are scrutinized not only for their financial efficiency but also for their disinterested objectivity. These demands bring unremitting political, social, and economic pressure to emphasize the transparency of the process by which decisions are taken and actions monitored. The focus is on verifiable outputs or performance indicators rather than on the underlying value of the outcomes of those decisions and actions [Brunsson, 1989]. The processes of accounting systems and the quantifiable output measures that they report are among the practices that are most accommodating to this insatiable need for more and more seemingly objective verification [Porter, 1995; Power, 1997].

In this context it is somewhat paradoxical to find ourselves often being criticized for the narrowness of our view of management accounting [Boyns and Edwards, 1996; Tyson, 1998]. For our distinctive emphasis has been on the constitutive role of accounting practices and discourses in the widespread 19th century development of the new kind of human performance measurement which created "calculable persons" within mass populations [Hoskin and Macve, 1986; Miller and O'Leary, 1987].[23] If anything, we might have expected to be criticized more for a tendency to see everything modern as yet another accounting, thereby failing to identify important differences between the development of particular business accountings and other modes of accountability and calculative routine.

What we do have here is a major historical question: what is the connection, if any, between those business accounting developments that both we and economic rationalist accounting historians have charted from the late 18th century and

[23]Practices that we have labeled "grammatocentric" [Hoskin and Macve, 1994b].

these wider developments in accountability and, in particular, in calculative technologies?[24]

If there is none, accounting's history may still be important purely from a business perspective although, as already observed, the limited theorization to date of its importance within the economic rationalist framework, both at the general level and, more significantly, in respect of specific accounting techniques, has so far prevented its entry into the mainstream of business history and organizational theory. But a potentially greater illumination still lies in identifying wider linkages to changes in economic organization and society, to the phenomena of increasingly global markets, and to rapid advances in information technology, and new reflexivities between social structures and individual actions and freedoms, now deemed among the key characteristics of modernity [Giddens, 1991, 1999]. The quest may fail. But if it is to succeed, it suggests that a priority for the accounting history research agenda is a focus on the relationship between accounting developments and the wider historical developments in creating "calculable persons in calculable spaces" [Miller, 1992]. This focus has been central to our own research agenda [Hoskin and Macve, 1994b], as well as to our work with collaborators from a more economic rationalist tradition.

This has led us, when it comes to specific research questions, to argue that the historical crux is to identify the discontinuity between early attempts at costings for accountability, decision making, and control purposes, and what may be seen as the modern approach based in a human accounting. Hence we argue, in terms of tracing a new "normalization of human action," for the need to trace where, when, and why labor standards were first articulated and systematically implemented, when the focus shifted from machines to men. Such standards introduce new practices and a discourse which extends beyond the engineering standards that assess materials and machine efficiency to the establishment of norms of human performance for modern managerial control [Fleischman et al., 1995].[25] It is

[24]In this respect, Miller and Napier [1993] asked pertinent historical questions, even though we would argue that the conclusions they drew as to the relevant archive were largely misplaced.

[25]Reference to labor standards does not imply the full panoply of labor standard costs and variance analysis that developed as part of the Taylorist efficiency movement of the late 19th/early 20th century [Fleischman et al., 1995, pp. 166-167]. Tyson [1998] here missed the point at issue (see below).

only a first, but it is nonetheless a crucial, step towards inventing the modern, increasingly internalized, human accountability, not just of labor but of all organizational participants, including all ranks of management, in a "hierarchy of mutual surveillance" that extends throughout and outwith the organization [Ezzamel et al., 1990].

It was in addressing this specific research question that Fleischman et al. [1995] found that, although Boulton & Watt was an engineering firm in the vanguard of BIR accounting practice in the sophistication of its records, the transition from highly sophisticated engineering standards for the material components of constructed steam engines to comparable standards of economic performance and labor efficiency was not achieved, despite an initial, impressive attempt around 1800. The famous piece-rate regime for which the firm has become renowned was found to be an isolated episode that did not presage the birth of modern managerialism. The historical discontinuity, the crux which introduced systems of control discipline of the kind that, through internalization of performance norms, nowadays "quietly order us about" [Foucault, quoted in Megill, 1979, p. 493] was still to occur.

Both Fleischman et al. [1995] and Boyns and Edwards [1996] called for confirming evidence to support the findings about Boulton & Watt in a wider application. And, as an example, Boyns and Edwards's own work [1996, 1997a] on the Dowlais ironworks demonstrated that accounting control over labor was not one of the features of the increasingly sophisticated use of the accounting system there in the mid-19th century.[26] Clearly more work needs to be done, and indeed the focus of various economic rationalist historians on unearthing the range of early accounting developments is itself grist to our mill. For the more evidence that is forthcoming of the sophisti-

[26]More recently, Fleischman and Macve [2000] have reexamined the archive of the coal mines of the Northeast of England during the late 18th and early 19th centuries. Their examination of the records shows, once again, that detailed accounts were kept of output and of the efficiency of inputs of materials and use of equipment (horses and engines). In this regard, their findings reinforce the growing evidence of the sophistication of BIR cost accounting, roughly dated 1750-1850, back to its origins in the 18th century. But, strikingly absent is any correspondingly detailed examination of human performance to provide a scientific determination of what should be a "fair-day's pay for a fair-day's work" as a basis for setting the piece rates for the miners, a practice that we have identified in particular U.S. contexts in the first half of the 19th century [Hoskin and Macve, 1994a].

cation of accounting developments in many other respects, both in the U.K. throughout most of the 19th century and in the U.S. before the Springfield Armory episode and the organization of the railroads [Hoskin and Macve, 1988, 1994], the more striking to us is the absence of what we call "human accountability."[27]

As we shall set out in our conclusions, this focus on the specific research question of how this kind of human accountability was introduced does not constitute our whole research agenda. However, we do regard it as a key piece of the jigsaw if we are to understand how the new power of accounting has changed both business strategy and its structure.

We now turn to the specifics of our critics' attacks. In order to avoid much repetition and the temptation to wander into interminable byways of alternative refutations of possible alternative interpretations given by one author of another, we set out here a highly simplified schema of our own view of the crucial discontinuities and linkages in the development of modern management accounting. Certain points are already supported by our own research and that of others to date; other components are still tentative and need further research, including further reexamination of archives which others have previously interpreted differently. We shall then be able to distinguish those of our critics' arguments which we consider reflect a misunderstanding of our own position and those where we have substantive disagreements to resolve. We therefore present the following propositions which will be subsequently referenced by the corresponding letter:

A) Accounting has always embraced cost and management accounting in the sense of analysis of activity and the use of accounting information for choosing, planning, and controlling activity.[28] These purposes remained embryonic until choice between significant economic alternatives became available

[27]While we have been criticized [Boyns and Edwards, 1996; Tyson, 1998] for the "narrowness" of our approach, and apparently been ignored by Miller et al. [1991] and Carnegie and Napier [1996], we would hope that accounting historians who do not share our own theoretical lens would nevertheless find value in the archival data that we and our collaborators have unearthed on the range of accounting practices in the U.S. and U.K. enterprises that we have ourselves examined. That is as much, perhaps, as an historian can legitimately ask of professional colleagues, however strong his or her own theoretical priors [de Ste. Croix, 1981].

[28]We accept, of course, that such concepts are part of a modern mentality which cannot be literally translated to earlier times [Miller and Napier, 1993].

[Macve, 1985]. They clearly gained a new intensity in the industrial revolution as technological innovation accelerated, as well as acquiring a much more significant role in enabling the coordination of large enterprises. The extent of those changes is an important area of accounting history research. At the same time, the financial aspect of accounting's role also intensified with the increasing separation of ownership and management and the increasing replacement of individual capitalist entrepreneurs by passive, dispersed shareholders [Yamey, 1977].

B) These 18th-19th century developments occurred in both the U.S. and the U.K.,[29] but at different times and to different extents, reflecting, *inter alia,* the longer persistence of family-owned and managed firms in the U.K. and a greater emphasis on informal and social methods of control in the U.K. versus formal, rational, and objective methods in the U.S.[30] The differing developments in management accounting are paralleled by differing developments in financial accounting. The professional influence of auditors came earlier in the U.K. [Armstrong, 1985; Matthews et al., 1998] while formalized standardization and regulation of accounting and auditing practice under the aegis of the SEC came much earlier in the U.S. [Macve, 1997].

C) A leading characteristic of modernity, certainly by the end of the 19th century, is the creation of "calculable persons in calculable spaces" [Miller, 1992], a new objectification of human performance and normalization of individuals within large statistical populations, linked also to new modes of state intervention in economic and business affairs. Given that rapid population growth and mass employment are features of the 18th-19th century economy on both sides of the Atlantic, it is relevant to enquire how far the significant discontinuity from which this characteristic of modernity has emerged may be argued to have had its genesis nearer to the beginning rather than to the end of the 19th century [Hacking, 1990; Defert, 1991; Ewald, 1991], and how far it is associated with changes in the management of business itself.

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[29]There is not space in this paper to consider developments in other 18th-19th century industrializing countries, although we mention the case of France briefly below.

[30]These characteristics, in turn, reflect the very different social history of the two countries, especially given the largely indigenous population of the U.K. versus the highly immigrant population of the U.S.

D) "Ways of organizing and ways of calculating have developed hand in hand" [Miller, 1992, pp. 78-79]. In the U.S., significant changes in the organization of business structure and accounting, linked to changes in business strategy, have been identified by Chandler at the Springfield Armory in the 1830s and on the railroads beginning in the 1840s. Our own reexamination of these archives has identified the most significant of these developments, both at Springfield and on the railroads, with engineers who were graduates of West Point, where their education under the new system introduced by Superintendent Thayer from 1817 was based on writing, examining, and grading all aspects of a student's performance, within a highly divisionalized and decentralized administrative structure. We argue that this disciplinary experience was a major factor influencing the approach taken by these graduates to the business reorganizations in which they played a leading role. They inculcated a new "grammatocentric" power-knowledge regime of management practices and discourses, which, following Foucault's [1977] analysis of modern knowledge and power in society generally, may be seen as comprising a system of objectification of human performance within a hierarchy of mutual surveillance. Both Springfield and the railroads were also important centers for the diffusion of new technologies, including these new technologies of management, so that the changes there had a much wider influence. This new managerial dimension of human accountability, we argue, combined with the existing technological and other economic factors that had already made Britain the wealthiest industrial country in the world, now enabled the new managers of U.S. business rapidly to overtake the U.K. in economic power during the 19th century, albeit starting from a negligible base.

E) In the business context, the distinguishing features of this new human accountability included, on the accounting dimension, the development of standards of work performance as a basis for fixing piece rates and wages, thereby providing at the shopfloor level both discipline and economic incentive to the work force to internalize business goals so as to begin to become governable persons [Miller and O'Leary, 1987]. At higher levels of management, a comparable, increasing emphasis on performance measurement reflected alignment with top management's emphasis on return on investment, linking the accountability and incentives of top management through financial accounting to owners' returns. On the organizational

dimension, a new emphasis on formal structures, which in the U.S. culminated in the divisional or "M-form" organization of profit centers, was reflected in linkages between accounting and organization, and between strategy and structure.

F) While the U.K. in many ways retained its distinctive management culture, it has always been fascinated by U.S. developments and been eager to import at least aspects of American innovation. Today, the American model of calculative, managerial enterprise dominates. This is not to argue for the "Ambrit" fallacy criticized by Littler [1982, p. 50] and others [Boyns and Edwards, 1996, p. 47]. As already argued, U.K. and U.S. accounting and management practice developed in different ways in the 19th and early 20th centuries. However, there was gradually increasing interchange, through the emergence of U.S. cost accounting literature and scientific management at the end of the 19th century [Fleischman, 2000]; through various British governmental and other official attempts to investigate what was held out as being American best practice; and, in the 20th century, through U.K. chartered accountants "learning American cost-accounting principles and procedures," whether as individuals working for American-owned firms [Matthews et al., 1998, p. 210] or by officially visiting the U.S. to learn about management accounting itself [Anglo-American Council on Productivity, 1950, cited by Boyns and Edwards, 1996, p. 46].

G) The combination of these factors suggests the need for a wide-ranging, theoretical and historical research agenda which covers developments in both management and financial accounting and links them to wider structural changes in business, business education, and beyond [Gwilliam et al., 1992]. However, it may be that only some of the above propositions can survive detailed examination of the historical evidence. Almost the whole chain of linkages would be shattered if certain key links were destroyed. From the perspective of accounting, the key links are clearly D and E. So here is where we have focused the majority of our research to date. Given the critiques that have been made of it already, as analyzed in the next two sections, we need to be careful to spell out exactly what we are saying at these points. We shall refer to them further in addressing the specific criticisms that have been made.

BOYNS AND EDWARDS

From a wide range of detailed conceptual and archival

work by Boyns and Edwards and their collaborators on BIR and French firms' accounting, we focus here on two recent papers and one book which have directly or indirectly challenged our own interpretation of the development of modern cost and management accounting. Below we briefly summarize the authors' main arguments, with our own comments thereon presented within double bold brackets.

Boyns and Edwards [1996]:

- U.K. and U.S. accounting in the mid-19th century must be seen as having developed in significantly different ways. **[[**We agree, as this is an essential element of our own thesis. See B and F above.**]]**

- Chandler's history of the growth of multi-unit business enterprises (MBEs) in the U.S. focuses on the new function of administrative coordination and allocation, the visible hand replacing the invisible hand of Adam Smith's competitive market economy. It is primarily concerned with higher levels of management coordination (departmental headquarters, central office, general office), not with control over the shopfloor, the focus of later scientific management and Taylorism where our own work on Springfield is located. **[[**We agree; see D and E above. But, as we have argued in D above, Springfield represents a crucial first stage. While Boyns and Edwards themselves accept the conclusions of our work on the link between West Point and Springfield,[31] Tyson [1990] has argued against there being any significant West Point influence on the developments at Springfield. Consequently, we have had to develop our arguments on the nature of the changes in shopfloor discipline there in considerable detail [Hoskin and Macve, 1994a]. Moreover, it is clearly important to our defending the significance of the West Point link to Springfield that we do not find similar developments elsewhere in the U.S. before then and that we do not find similar developments in the U.K. until much later. The necessary juxtaposition of the conditions of possibility for such a transformation in human accountability may have occurred elsewhere independently, but the only evidence and theoretical explanation that we have at present is uniquely American, so that the transmission to the U.K. (see F above) and elsewhere occurred much later. Testing this thesis has been a large part of

[31]They do not accept the significance of our link between West Point and certain railroads.

the motivation for the papers on the Waltham-Lowell mills in the U.S. [Hoskin and Macve, 1996] and on Boulton & Watt and the Northeast coal mines in the U.K. (Fleischman et al., 1995; Fleischman and Macve, 2000). Nevertheless, we agree that the more important arena is that of higher levels of management in MBEs, and we are currently focusing our work on the U.S. railroads, developing the arguments previously put forward in Hoskin and Macve [1988, 1994b] as to the significance of the West Point link to the railroads and thence to the mid and late 19th century U.S. industrial-military complex.**]]** In this context, Boyns and Edwards [1996, p. 41] noted, following Chandler, that "information originally collected to enable efficient co-ordination of flows between departments was recognized as having a potential to assess the performance of managers" but warned that "its usefulness and efficiency in this respect is an issue which has received little detailed examination by historians." **[[**This debate is at the heart of our own enquiry into the history of the present (C above), a present which is characterized by the proliferation of performance indicators [Power, 1997].**]]**

- Boyns and Edwards [1996, p. 43] correspondingly argued that our definition of managerialism focuses exclusively on "control of the workforce," contrasting Aucoin's wider definition:

> Managerialism, in contrast to the traditional bureaucratic ideal of 'administration', . . . emerged in the private sector, . . . [because of] an increased concern with 'results', 'performance' and 'outcomes'. Hence higher priority is given to the 'management' of people, resources and programmes compared to the 'administration' of activities, procedures and regulations.

[[We disagree with Boyns and Edwards' interpretation of our position for the reasons already given and because Aucoin's definition essentially matches our own.[32] The important difference of insight lies in our focus on how this managerialism is exercised "grammatocentrically" through "writing, examining and grading," as a "positive system of power which deploys the feedback of expert knowledge to identify weakness and engineer improvement" [Boyns and Edwards, 1996, p. 42]. We have

[32]"Management refers to the effective co-ordination of both 'men and matériel' (to use the military term)" [Hoskin and Macve, 1994a, p. 18].

set this argument out more fully in Hoskin and Macve, 1990.**]]** Boyns and Edwards [1996, p. 44] therefore asserted that our "narrow focus" on "human accountability" [e.g., in Hoskin and Macve, 1994a; Fleischman et al., 1995], in particular on establishing "the precise sequence of development that led to the widespread adoption of standards for measuring human performance that are the basis of modern managerial control," puts us at risk of "missing, or ignoring, significant developments and, possibly, discontinuities in accounting over the last two centuries." **[[**For the reasons already given, we reject this characterization of our overall framework and research agenda. We have explained above why we have given priority in much of our work to date to the issue of standards of work performance. However, our actual archival research, in order to emphasize what we see as distinctive, has necessarily had to look also at the related developments in other aspects of management and management accounting in the enterprises we have surveyed. Where we differ in substance from Boyns and Edwards and other economic rationalist accounting historians is in how we interpret the relative significance of those different kinds of changes in practice. The theoretical, evidential, and historiographical reasons that form our own interpretation, as in D and E above, have been previously discussed.**]]**

• Boyns and Edwards then proceeded to the heart of their paper and examined the Dowlais ironworks in the mid-19th century "to assess whether or not they used their system for achieving human accountability or for other purposes," essentially as we ourselves might have done. The conclusions they drew from the evidence, that the accounting system was not used for labor control in the 1850s, are, however, very different. They considered that we would regard this "lack of concern with labour discipline and performativity to represent entrepreneurial failure," while they would regard it as a rational decision by Dowlais management given the likely costs and benefits of attempting to add this kind of accounting control to their existing structure for work-force contracting and discipline, under the prevailing conditions in the labor market. This same argument was essentially used by Tyson [1990] with regard to the Springfield Armory work force in the 1830s [Hoskin and Macve, 1994a]. **[[**To this our response would be, there was no entrepreneurial failure; rather, the conditions of possibility which enabled the introduction of the new human discipline in the U.S., particularly the West Point influence, were not yet

manifest in the U.K. as they had not yet been in the U.S. at Springfield under Lee's superintendency:

> To come to treat human performance like that of a machine, functioning as if it is observable, measurable and controllable in terms of efficiency, is to create a new discourse and a new way of seeing, describing and controlling the world [Fleischman et al., 1995, p. 174, cited by Boyns and Edwards, 1996, p. 44].

Boyns and Edwards (similar to Tyson [1990] *mutatis mutandis*) saw sufficient explanation for the lack of an accounting focus on human performance in the economic conditions at Dowlais at the time. But to convince their skeptics, they would need to identify what change in costs and/or benefits would have been sufficient to make the change worthwhile. There is certainly no doubt that Dowlais, like other 19th century concerns, would have benefited from an improvement in labor discipline to minimize the cost disadvantages of downtime of expensive capital facilities [Boyns and Edwards, 1996, pp. 51-53], especially under Clark's strategy of increasing output to reduce unit costs (see our discussion of Boyns and Edwards [1997a] below). As Boyns and Edwards argued, the nature of 19th century labor contracts, in particular the ways in which internal contracting could substitute for accounting for and control over individual workers' labor costs, is an area where detailed knowledge is still largely lacking. Nevertheless, if one always assumes that accounting changes are an optimal response to changing costs and benefits, it is trivially true to conclude that any particular accounting configuration must have represented a rational trade off of the costs and benefits as currently perceived [Boyns and Edwards, 1996, p. 55]. We accept the tautology, but we believe it has potential empirical content because we have an historical theory of what it was that was missing from the perceptions of the Dowlais managers. They were trapped in the premodern discourse that could not yet see human performance in the same scientific terms as machine performance (see propositions D and E above).**]]** From Boyns and Edwards' own perspective, of course, what is more significant about Dowlais is the different way in which the accounting system came to be used following the change in top management in 1855. As this is also the substance of their 1997a paper, we will discuss it under that heading.

Boyns and Edwards [1997a]: This paper was not structured primarily as a critique of our own position, although the introduc-

tory and concluding sections repeated the observations that the work of "Foucauldian writers" such as ourselves "has given particular weight to the specific developments at the Springfield Armory in the 1830s;" that "there often appears to be an implicit assumption" that "developments in Britain were . . . identical, either in form or timing, to those in America;" and that "Foucauldians" have attributed the development of management accounting "to the need for managers of corporations to control and discipline labour by rendering their actions visible and calculable. . . . 'managing by the numbers' " (pp. 19-21). **[[**As already stated, we reject these interpretations of our position. See A, B, E, and F above.**]]**

A more important target was Chandler. "It is directly implied in his work that the direction of causation runs from strategy, through structure to accounting," although it is noted that Johnson and Kaplan suggested the reverse causation and "that developments in management accounting, rather than having been a consequence of the emergence of large-scale businesses, 'may have facilitated the growth of large scale firms' " (p. 20). Boyns and Edwards' own conclusion was that, "the link is more complex, possibly reflecting . . . a symbiotic rather than causal relationship" (p. 41). **[[**We would agree. The relationship between strategy and structure in the new 19th century managerial U.S. railroad corporations reflects the impact of the West Point graduates on both [Hoskin et al., 1998].**]]**

Boyns and Edwards were concerned to settle the definition of management accounting, where they adopted the ICAEW's 1954 definition, "any form of accounting which enables business to be conducted more efficiently" (p. 22). **[[**For the reasons given at A above, we have no quarrel with this as a working definition, as we do not believe our theoretical and historical differences of substance relate to the definition of management accounting, but to what have actually been its most significant developments in the 19th and 20th centuries. However, we would repeat our view that management accounting is more than just business statistics.**]]**

The substance of Boyns and Edwards' paper plots the changes at Dowlais, one of the largest industrial enterprises of the mid-19th century and a forerunner of today's GKN plc, where, following the death of Sir Josiah John Guest, direct management responsibility passed in 1855 to G.T. Clark. Clark was accountable solely to the trustees of the Guest family estate, the family now becoming absentee owners. Clark revived Dowlais' fortunes dramatically by a strategy of which the major

elements were (1) ensuring full use of capacity to reduce unit costs; (2) successfully gambling on technological advance by being the first manufacturer to adopt the new Bessemer converter to move into more profitable steel production; (3) intensifying the coal-mining activity to secure adequate supplies for his enlarged furnaces, thereby also diversifying into a new product for sale; and (4) abandoning the policy of the London House of maintaining high prices for the sale of final output.

Boyns and Edwards saw the changes in management structure as less extensive than had been previously argued by other economic and business historians, but they did see Clark paying much more attention to the implications of the cost accounting figures in relation to adopting and monitoring his high output strategy and to identifying the cost savings and other benefits from diversifying. His new general manager, William Menelaus, was routinely requiring "from each department weekly reports on a few centrally-determined strategic statistics, such as output, costs and hours, and giving similar summaries to Clark" (p. 29). The new accountant, William Jenkins, was able, as he put it, gradually to "alter the system in the large accounts of this place" so that "the transactions of the Company in the Books here are I think becoming more clear and simple." He began in 1860 providing Clark with annual reports, supported by many pages of detailed analysis (p. 32). The underlying cost accounting routines, however, may not have changed very much. The cost sheets, of which the surviving examples are all from before 1855, showed "the following three fundamental features . . . : the company used, as far as possible, transfer prices that exactly recovered costs incurred; the accounting method used was total (absorption) costing; and, consequently, profit recognition was delayed until products were sold to the customer." By 1851, the cost sheets reflected: "figures in terms of cost and quantity for inputs and outputs on a total and per ton basis" and "inputs per ton of output expressed in terms of cost and quantity."[33] It is also known that "the information was extracted from the books of accounts kept at Dowlais and that these were kept on the double entry basis" (pp. 33-34).

Boyns and Edwards summarized the use of this information: "Whilst some evidence exists, therefore, of the use of cost information by the Dowlais management prior to the Clark era

[33]Similar information can be found in the "view-books" of Northeast coal mines in the BIR [Fleischman and Macve, 2000].

of control, it is not very strong and does not suggest any major role for the accounting/costing system in management decision-making. This situation was to change, however, when Clark assumed control" (p. 36).

Clark's response to the crisis he inherited was to undertake extensive capital expenditure to refurbish the plant in order to increase output and thereby reduce the cost of manufacture. Improvement in profitability soon followed. For 1855-1856, the accounting records had shown that the cost per ton of finished iron had risen to nearly £7. 18s. 1.6d, while the selling prices had declined below that cost by an average of more than 18 shillings per ton (p. 36). But in 1857, Menelaus prepared a series of ad hoc reports for Clark based on figures supplied by Jenkins and others demonstrating (1) the difference in yield (i.e., improvement in output per ton of coal used and the consequential cost saving of £28,000 per annum) achieved, in part, through weekly monitoring of each furnace's output as changes in manufacturing methods were tried and through comparison of yield figures with those of local competitors; (2) the improvement in efficiency of use of other inputs from trying different input combinations, measured per ton of iron produced, and the consequential cost saving of £7,800. 14s. 8d per annum; and (3) comparisons to show the falling total cost per ton of output, although the computation of total cost was complicated by some of the £23,643 cost of capital improvements having been charged as current costs. There are also calculations of the implications of now needing both to build the country's most powerful mill to exploit the potential for increased production capacity and also to increase coal production.

By 1859, there are calculations by Menelaus of the benefit of paying the asking price of £50,000 for another ironworks in order to obtain cost savings on coal by exploiting its mining lease and by substituting small for large coal, to secure coal supplies, and also to obtain the benefits of diversifying into the sale of coal. Boyns and Edwards summarized, "The specialist reports made heavy use of costing information as a basis for assessing the effect of previous decisions and as a prominent input in formulating new plans. We also imagine that routine data was used on a day to day basis by middle management to identify inefficiency and waste, though insufficient material has survived to prove conclusively that this was the case. We know, however, that cost and yield analysis featured prominently in the annual reports prepared by Jenkins for Clark. . . . " (pp. 40-41).

Their conclusions to the paper were that the use of accounting information at Dowlais developed in an evolutionary fashion from existing systems in order to meet changing management needs, so that the relationship between strategy, structure, and accounting change is more complex than Chandler had proposed. Clark introduced a clear, new strategy, supported by costing and other production data. Although there were some top management changes, Dowlais was already, and remained, a multi-unit business with distinct departments. While the use of accounting information intensified, there was no marked change in the system itself.

Pointing out that there is no evidence of the use of the costing system "directly to monitor and control the performance of individual workers, be they unskilled labourers . . . or the managers of different departments" (p. 42), Boyns and Edwards again argued that this suggests "fundamental differences between the British and American approaches to management accounting" and called for "comparative research" which "could yield some important findings for contemporary debates" (p. 43). **[[**As already noted, exploration of such differences underlies some of our own work [e.g., Fleischman et al., 1995; Fleischman and Macve, 2000].

As to the central issues, Boyns and Edwards clearly handled the evidential issues very carefully. Whether one adopts the perspective of our work, that of their other studies [e.g., Boyns and Edwards, 1997b], or that of others [e.g., Fleischman and Parker, 1992, 1997], their major conclusions about the changes at Dowlais fit well with the general picture of U.K. management accounting developments around this time. They also fit with our main thesis as to the different pace of developments in the U.S. and U.K. (see B and F above). In generalizing from Dowlais to modern issues, one would, however, need to take into account some significant factors about Dowlais as Boyns and Edwards describe it. It was still a private company, and Clark himself observed that he would not have been able to persuade a meeting of stockholders in a limited company to endorse his strategy. While the operations were divided between departments with middle managers, Clark's own dominance was total and "despotic" (p. 41), quite contrary to that now prescribed by codes of corporate governance. Although a manager himself, he appeared to share the entrepreneur/owner's outlook as expressed by his neighboring ironmaster, William Crawshay II, who wrote to his son in 1860 [as quoted by Pollard, 1965, p. 22]:

> I know what the Master's Eye is—nothing can go long without it and I dread the consequences of your longer continued inability to personally look after the large concern at Cyfarthfa.[34]

As to the historical insights from identifying Clark's use of the costing information in support of his strategy to rescue Dowlais and secure its long-term survival, the main plank of the strategy did not really require any more sophisticated analysis than that greater volume of output reduces unit costs. Precisely what those costs were was less important, as illustrated by the accounting treatment of new work and consequently of depreciation. There was also plenty of mileage in the direct cost savings from the more efficient use of cheaper coal and other raw material inputs. Complex profitability calculations of price and volume do not seem to have been undertaken. Clark's faith in cutting prices was not shared by the London House agent responsible for sales (p. 28):

> we have never yet arrived at an understanding of the comparative loss of 'reduced make' and 'full make at losing prices'. The result of the latter are those which are more prominent here to our eyes—the former to yours—and I can well understand the difficulty of comparison is great.[35]

Clark's own remuneration was incentive-compatible with his chosen strategy [Gietzmann, 1995]. In 1858, he proposed, in addition to his salary, a commission based on sales above 60,000 tons of iron per year (p. 27).

Finally, the observation that use of cost accounting information is intensified during crises, or when owners/managers suddenly discover a need to get control and find out what is going on, is paralleled in earlier examples such as Wedgwood's pottery [McKendrick, 1970] and Boulton and Watt's Soho Foundry [Fleischman et al., 1995]. It is not always clear how intensively the information continued to be used after the crisis

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[34]Dufaud reported in 1823 that at Cyfarthfa, "all costs are known," but this was the result, not of "extensive costing systems but via subcontracting rates established between the mine owners and entrepreneurs in the mines who hired their own labour on the basis of independently determined wage contracts" [Bhimani, 1998b, fn. 4]. Further discussion of such internal contracting appears below.

[35]At this period on the U.S. railroads, such comparative calculations were commonplace and a particular feature of Haupt's strategic thinking on the PRR [Hoskin and Macve, 1994b].

had passed, and how far one can generalize to the likely routine use of such information by other industrial concerns.[36]

At the routine level, as Boyns and Edwards [1996, p. 48] put it, Dowlais' multi-unit structure meant that it "had a need for administrative co-ordination and to keep the production in the various departments 'in balance.' " As we see it, much of this need would presumably have been met by physical rather than monetary accounting measures.[37] Clearly routine accounting records have many actual and potential uses (our proposition A above), and it is interesting to have these various uses at different times and in differing circumstances illustrated. However, we would still argue that the development that gave them their most powerful, continuous, modern role, going way beyond that of statistics or simply organizational routine, was the development of what we have called human accountability within a defined organizational structure. The negative evidence from Dowlais set out by Boyns and Edwards in respect of human accountability and labor control confirms our own work on other U.K. enterprises, and on U.S. enterprises before the Springfield Armory episode.**]]**

Boyns, Edwards, and Nikitin [1997a]: This valuable study [see also Boyns et al., 1997b] charted developments in France and Britain, and illustrated (p. 18) the now generally well-accepted thesis that French 19th century accounting texts were ahead of French practice. By contrast, U.K. accounting practice was often well ahead of accounting texts, which only began to appear towards the end of the century [Boyns and Edwards, 1997b]. Clearly, from our own perspective, research on accounting developments in France is of particular interest, given the development of the pedagogic regime at West Point from French models.[38] There is not space here to discuss all the issues that the authors raised in examining the possible reasons for this

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[36]As Loft [1995, p. 22] recounted from an interviewee who had been a cost accountant between the two World Wars: "If the business was making a profit they weren't concerned with all my records…in my time, I gathered a lot of statistics which have never been used."

[37]See also Payne [1988, p. 32] re Cyfarthfa in 1825, citing Jones [1985, p. 136].

[38]For a history of Gribeauval's experiment with interchangeable-part manufacture of French artillery, see Alder [1997]. The potential links to Europe go deeper given the Prussian development of professional examinations for military officers from 1808, reflecting the existing university-based training of civil officials [Hoskin et al., 1998].

differential development. We simply note that, in their introductory chapter, the authors complained that "Foucauldian accounting historians believe that their methodological approach is broader than that followed by other accounting historians, and are particularly critical of what they call 'traditional' accounting history." The authors went on to state that, while they themselves adopt an essentially economic rationalist approach, they are nevertheless "willing to acknowledge the potential influence of other factors, including the socio-political and historical contexts of a period" (p. 6). In their concluding chapter, they repeated their criticism of our focus on "shopfloor labour" and the Springfield Armory as an "incomplete" analysis of management accounting's development (pp. 180-181). **[[**We have rebutted this criticism above. Here we do no more than note Bhimani's [1998a, p. 397] surprise, in his review of this book, at the authors' summary dismissal of the Foucauldian approach.**]]** Boyns et al. do, however, confirm that they had found no positive evidence in Britain or France of accounting before 1880 being used principally to control labor (p. 181).[39]

TYSON

We have previously responded [Hoskin and Macve, 1994a] to Tyson's [1990] critique of our work on the Springfield Armory, where he received support from Boyns and Edwards [1996, p. 43], so we do not repeat our arguments here. We have also challenged Tyson's [1992] conclusions concerning the use of cost information at the Waltham-Lowell mills [Hoskin and Macve, 1996], but Tyson [1998] has now restated his own case, and it is to this paper that we now briefly reply.

Tyson [1998]: At the Lawrence Manufacturing Co. in the 1840s, the costings included six-month schedules, integrated with the double-entry ledgers, analyzing profits and costs by each of five mills for nine individual varieties of cloth. The main thesis of our 1996 paper was the contention that the sophistication of these Waltham-Lowell companies' cost analyses, and the extent of their use for management purposes, had been overstated by previous researchers. The accounts had been taken as evidence that a modern managerial approach was already being adopted in manufacturing contexts for the purpose of developing a re-

[39]Further research is needed on Decazeville [cf. Hoskin and Macve, 1988, p. 64].

gime of cost control and performativity within the factory. We suggested that they have a different explanation, as calculations made for classic mercantile purposes to track flows of money spent and received in manufacturing. Their arithmetical precision reflected the conditions under which the calculations had to be carried out and verified rather than their economic significance. It is important for accounting historians to allow modern intent in such accounting only after the most stringent scrutiny of the evidence.

Tyson [1998] responded in three main ways:

- Our narrow interpretation of managerialism and management accounting is focused on the development of labor standard costs and variances, ignoring other important managerial functions and corresponding uses of accounting information. **[[**We have dealt with this argument, which we consider to be a basic misunderstanding of our position, above in relation to Boyns and Edwards' criticisms (see also our propositions A and E above). Anyway, it is irrelevant to the thesis in our 1996 paper that there is no *evidence* of the supposed other uses of the information by the mill owners/managers.**]]**

- We "wrongly imply that decision making based on suboptimal information cannot be perceived as rational," although this line of argument is only "suggested but largely undeveloped in the current [i.e., Tyson's] paper" (p. 212). **[[**Although it is not developed further, we have discussed this issue from a theoretical perspective above. One of the major motivations for our own work has been to try to understand how such "inherently problematical" information [Ezzamel et al., 1990] has come to play such a powerful role in modern corporate life.**]]**

- Tyson's primary argument was that evidence from outside the accounting records themselves does in fact demonstrate that Waltham-Lowell owners/managers were using their accounts in "a variety of decision-making, management control and problem-solving scenarios" (pp. 211-212). **[[**The production of such evidence would indeed refute our 1996 arguments where we adduced evidence [from Lubar, 1984] that the mill agent at Lawrence, for example, did not regard the costings as of any great significance beyond demonstrating a full and honest accounting for monies received and spent:

> expenses are not easily distributed with entire accuracy, nor is it of much importance whether it is so or not, so long as it can be fully documented that the

> funds have been faithfully applied and correctly accounted for.

Tyson [1998] did not comment on this first-hand observation. Neither did he adduce any substantial evidence of the use of the costing figures for management decision making and control.[40] Tyson cited a number of secondary opinions, but when he turned to the primary sources, rightly looking for evidence "beyond the ledger," the best he could come up with was (1) an ad hoc report at Merrimack Manufacturing Co. which, if anything, suggested that the apparent cost should be ignored in making the most economically favorable decision (p. 217 and fn. 15), and (2) a surmise that "it is not unreasonable to assume that Nathan Appleton read the cost reports he received regularly . . . " (p. 217). See our comments on evidence above.

To be fair, Tyson admitted (p. 218) in relation to the detailed information about mill and product costs that, "it is unclear whether or how it was used in deciding which mill should manufacture particular grades of cloth" (spare capacity may have been the decisive factor) and "unfortunately, the available evidence does not permit a more precise conclusion about the actual use of cost information" although "it can also be argued that summary reports[41] contain information that, when extracted, *could* be used for production control" (our emphasis added). While Tyson unsurprisingly was able to find correspondence and minutes in the archive which exhibited awareness of considerations of quantity and cost on the part of mill owners/managers in making decisions, he adduced no primary evidence of the costs reported in the formal accounting system being directly utilized for any such management purpose, however widely defined. He merely repeated the assertions and conclu-

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[40]While Tyson quoted (p. 215), from Lubar's Ph.D. thesis [1983, p. 150], Lubar's own opinion as: "Cost accounting enabled managers and owners to communicate the results of the mill operations. It allowed them to evaluate technologies, to assess the productivity of employees, and, more generally, to establish and maintain control over the operations of the mill," Tyson was left speculating over the paradox that Lubar appeared to be describing a so-called "Hoskin and Macve" type managerialism when there is actually no evidence of accounting for labor discipline at the Lawrence mills (p. 215). When it comes to secondary opinions rather than primary sources, we would place more weight on a refereed article such as Lubar [1984] than on a dissertation.

[41]We do not understand why Tyson [1998, pp. 218-219) appeared to argue that we ignored the six-monthly "Analysis of the Profits," when this was the major focus of both Porter's [1980] and our 1996 paper. However, Tyson again only conjectured potential uses of the information therein.

sions of other historians who probably failed to understand the reasons for which such cost analyses evolved out of traditional mercantile records.**]]**

VERSIONS OF THE NEW ACCOUNTING HISTORY

Boyns and Edwards [1997b, p. 7] have commented: "In her otherwise admirable survey of the different methodological approaches—traditional, neo-classicist, Johnson and Kaplan, labour process and Foucauldian—Loft (1995) does not attempt to present a new, consensual view of the development of accounting." We ought therefore ourselves to review in detail the growing number of recent overviews of accounting history research in an attempt both to indicate where we believe our approach complements those of other accounting historians, and where substantive differences remain. A fuller version of that project must await another paper as, at this meta-level of critique, the various overviews do not directly criticize our own approach, although clearly such criticism is often a logical implication of the views expressed [e.g., Oldroyd, 1999]. We therefore restrict ourselves here to an abbreviated, nonspecific "review of reviews" of accounting history research. We identify three common themes in these reviews:

- While there is often polemic between "traditional" and "new" history, and between differing degrees of "critical" history (but also collaboration; e.g., Fleischman et al., 1995), the new conventional wisdom is that plurality of conceptual perspectives, research questions, and methodologies is now to be regarded as a sign, not of intellectual weakness, but rather of both the maturity of accounting history and of its consonance with the state of social science research and wider historical research. Hence Boyns and Edwards should not be surprised [cf. 1997b, p. 7] that "Loft (1995) does not attempt to present a new consensual view of the development of accounting." An exception is labor process and Marxist critical history which has a singular, clear, and exclusive, albeit monochromatic, view of the main driver of capitalistic development and of accounting's role as its accomplice.

- The "new" history frequently focuses on individual, apparently unconnected incidents in which changes in accounting, or new accountings, emerge in order to explore the discursive and institutional factors that underlay the "event," to reveal the "ensemble" of techniques and practices that constitute new forms

of social and economic calculation, and to demonstrate the historical contingency of what is called, or operates as, accounting at different times and in different places, including the present.

- While new historians respect the archive, rightly arguing its extension beyond traditional ledgers and accounting texts, their particular interest in theoretical interpretation has so far meant that much of the new history has primarily comprised reinterpretation of existing histories and other secondary sources rather than revisiting the primary archive to examine whether it will bear the weight of the new interpretations.

In relation to these three themes, we ourselves nevertheless adopt historico-theoretical positions which in several respects are closer to those of "traditional" historians [e.g., Fleischman et al., 1996; Oldroyd, 1999]:

- First, we approach our own study of accounting history from a unifying perspective of seeking to understand the relationships between accounting change and a theorization of economic and social change from antiquity to the present day. We focus in particular on forms and modes of writing and calculation, and on how, through their interplay with certain other practices (particularly pedagogic ones), they engender new modes of discourse and new institutional forms, thus constituting particular kinds of power-knowledge interrelation. We build on the work of Michel Foucault, but, given his own ignorance of accounting and his other historical misunderstandings, have developed our own theoretical view [Hoskin and Macve, 1993; Hoskin, 1993, 1994]. Clearly such a view stands in contradiction to other "unitary" views of accounting history, be they "capitalistic"/economic rationalist or "labor process"/Marxist.[42]
- Second, we believe that in any significant interpretive history of an accounting event, there should be an implicit, if not explicit, attempt to understand its relationship to events at other times and in other places, a hypothesis at least of how it might fit into a broader conception of the history of accounting.[43] Without such a conceptual grounding, there is no way of identifying what might or might not be a significant event in

[42]We have countered the criticisms made of us by the former school above. We shall deal with the latter in a further paper, although we comment on the inadequacy of its interpretation of changes in labor practices at the Waltham Watch Company in our concluding coda below.

[43]Although we ourselves have such a substantive conception, we consider that this second requirement holds even if the researcher's theory is that there can be no such broader conception [e.g., Oldroyd, 1999].

the sense, for example, that it illustrates the coming together of significant linkages between discourses, practices, and institutions. Implicit in our own approach to understanding what have been the significant discontinuities in the history of accounting is a parallel conception of what have been the continuities.

- Third, there must be a primacy of respect for the evidence.[44] While the evidence may often be inconclusive, and while it may be that many interpretations are plausible, nevertheless historical rigor demands that new interpretations demonstrate that they are at least not incompatible with the surviving, primary evidence. Also, proponants of new interpretation should have made the effort, in the spirit of Popper and scientific "falsification," to uncover and investigate sources of evidence that might have the potential to discredit them.

Our larger project is therefore to write, or at least to contribute, to a "new" history of accounting.[45] We have begun by seeking to identify the major discontinuities in that history that claim priority on our attention. As we have argued above, our work on the 19th century is not only or even primarily a "genealogy" of the Springfield Armory event [cf. Miller and Napier, 1993]. At the same time, if we have interpreted that event wrongly in the sense that there is no discontinuity discoverable there, the rest of the endeavor would probably be built on sand. However, if we have interpreted it correctly, and there is a genealogical link from West Point both to Springfield Armory production and to multi-unit management on the railroads, then our continuing genealogical task is to trace out how the increasingly complex networks of change agents extended from those sites into different spheres.

CONCLUSION

What then are the priorities now for accounting history research? We would argue that tracing the networks of influence by which the new 19th century accounting transformed individuals and organizations, first in the U.S., then in the U.K. and Europe, and now globally, still requires much work to build a coherent picture out of the pieces of the jigsaw. We have

[44]As we have previously affirmed in Hoskin and Macve [1994a, pp. 22-23].

[45]The late 18th century and 19th century period will be the subject matter of Hoskin and Macve [2000]. Here we shall challenge Levenstein's [1998] recent revision and extension of the Chandlerian thesis.

reviewed here a number of the negative findings from BIR history and early 19th century U.S. history. We need more positive findings from U.S. history in the later 19th century and early 20th century. So we conclude with a coda, an example of how the extension of the network of the newly significant discursive practices might be traced. It is only a tentative example, as we have not ourselves revisited the relevant archive, but it is suggestive.

We do so, while re-echoing the calls in Fleischman et al. [1995] and Boyns and Edwards [1996] for continuing investigation on both sides of the Atlantic, as well as in Europe and beyond [cf. Boyns et al., 1997a, 1997b; Bhimani, 1998b], to trace the conditions of possibility for the emergence of the key defining characteristics of modern accounting's power. Accounting's history must be further rewritten. While we must discard some currently cherished knowledge along the way so that there is a sense of loss and of "knowing less," we hope that thereby we and other researchers will indeed arrive at "knowing more."

CODA: THE WALTHAM WATCH COMPANY AS A MOMENT IN MANAGERIALISM'S EMERGENCE

The Waltham Watch Company (WWC) has been celebrated by U.S. historians as a major site for both managerial and technological innovation [Clawson, 1980; Hoke, 1990]. Recently, Fleischman and Tyson [1996] have looked more closely at how accounting may have contributed to this process. Their particular interest was stirred by the fact that the WWC, founded in 1849, still employed inside contracting (IC) up to the mid-1870s. Given that it was both an innovative and successful enterprise, as the first mover and then global market leader in the mass production of watches into the 20th century, this is an intriguing finding. IC has frequently been seen as a premodern form of organization. From an economic rationalist point of view, it has been seen as less efficient for managing large, complex businesses than full-blown, bureaucratic, managerial control, supported by cost and management accounting systems [Chandler, 1977; Johnson and Kaplan, 1987], and as maintaining a "producer ethos" inadequate to meet the forces of competition and insufficiently responsive to consumer choice [Fleischman and Tyson, 1996, p. 64]. From a labor process perspective [Braverman, 1974], IC has also been seen as premodern, an interim step on the way to the full capitalist

subjugation of mass labor within managerial hierarchies. At WWC, however, IC appears in the context of a highly modern technological and economic success story. Fleischman and Tyson therefore saw this as a strong refutation of both the economic rationalist argument as to IC's inefficiency, and the labor process thesis [Hopper and Armstrong, 1991] that the elimination of IC was effected primarily as means to secure the control of labor, with accounting as its tool [Littler, 1982, p. 66], rather than to introduce a more economically rational means of managing production.[46]

We share much common ground here with Fleischman and Tyson's presentation of the operation of, and then change from, IC at WWC. We have argued above for our own view of the disciplinary nature of accounting control, and why we find the economic rationalist explanation to be insufficient. We also reject the labor process theory, not because more powerful control of labor was not an outcome of the elimination of IC (or later of management based or standard costing, target costing, ABC systems, etc.), but because the theory so preemptively narrows an understanding of accounting's significance.[47] From our disciplinary standpoint, accounting becomes a powerful knowledge precisely as it begins to deliver cost and productivity gains, as well as both work force and manager discipline, simultaneously. So Fleischman and Tyson concluded (p. 74) that at WWC "the co-operation reflected in the raising and lowering of wage rates, as well as partial operative ownership of the enterprise,[48] was more suggestive of a power nexus to attain the

[46]In the light of Fleischman and Tyson's [1996] work, the relationship between IC and accounting-based modes of managerial control requires a more comprehensive consideration than we can give it here. Further discussion with regard to 18th/19th century U.K. mining practices is given in Fleischman and Macve [2000] and to the Soho works of Boulton & Watt, around 1800-1802, in Fleischman et al. [1995].

[47]Karl Marx demonstrated, from his own observations of factory conditions in early 19th century England, how capitalist owner/managers sought to extract more surplus value from labor through stratagems such as lengthening the working day ("absolute surplus value") or intensifying the rate of work ("relative surplus value") [Macve, 1999, p. 596]. This did not, as such, require any use of sophisticated accounting practices, although accounting systems could be deployed to facilitate such "sweating" once organizations became much larger and individual workers became less directly observable to "the Master's eye." But accounting could facilitate other modes of efficient managerial coordination and control equally as well.

[48]In 1871, over 40% of the work force were shareholders [Fleischman and Tyson, 1996, p. 69].

common good [the firm's wellbeing] than the labour process vision of single-purpose exploitation."

Fleischman and Tyson's analysis of WWC also suggests that the presence of IC as such was not such a significant feature in defining the absence or presence of managerial control. Correspondingly, its abolition did not signify a significant intensification of managerial control, and in particular of accounting, for whatever purpose. They cited (p. 73) Englander's [1987, p. 445] comments "about the uniqueness of company or industry factors," so that each case needs to be examined in context. To clarify that, however, we suggest that what is perhaps required is a closer differentiation between modes of inside contracting, noting that such quasi-market-based forms of control and coordination as ROI and contracting out, nowadays called outsourcing, are clearly compatible with the modern managerial regime, as well as being frequently justified in transaction cost terms.

The traditional IC model was for owners to strike a deal, usually a labor contract with an overseer or manager, who was then left to establish the work/reward ratio and the level of potential personal profit in negotiating further deals with prospective workers. However, Fleischman and Tyson's analysis of the IC model at the WWC (p. 68) challenged the view held by Clawson that the system was traditional in this way.[49] Instead, their interpretation of the limited evidence suggests that a very different set of work relationships may have been in play both while IC was in place and after its demise.

By the 1880s, when IC had been replaced and the internal contractors had become salaried foremen, an eyewitness account by Fitch in 1883 [Fleischman and Tyson, 1996, p. 68] describes a hierarchical control system where department foremen reported regularly to the superintendent:

> monthly cards are prepared by the superintendent for each foreman, stating the number and kind of watches to be made. Each foreman makes a daily report of work done and of the transfers of work between the several departments, and to facilitate this *each foreman*

[49]Clawson [1980, p. 116] claimed that at WWC "the contractor of 1870 was simply given a sum of money based on the contract price and the number of units delivered. The contractor had complete control over this money and paid his employees. The company had no records or formal way of knowing the number of the contractor's employees…or how much money the contractor kept for himself."

> *has a bookkeeper, who is responsible to the superintendent* (our emphasis).

In other words, by this time at the WWC, there was a highly disciplinary nexus. Centrally decided plans were relayed down to each foreman, from whom daily reports were relayed back. The production of each department and the coordination of production overall were both open to continuous examination and evaluation, with correction or improvement where necessary. In addition, a formal objectivity was conferred on the information generated through the separate definition of the bookkeeper's role as part of a staff (not a line) function. Thus, workers, foremen, and bookkeepers would seem to have been rendered calculable and calculating subjects of constant surveillance and judgment through being brought within the interplay of writing, examining, and grading.

But the historical question then is, when and how did this disciplinary nexus emerge? Did it actually predate the abolition of IC at WWC? Here Fleischman and Tyson tried to trace the emergence of the IC model back to the early days of the company, but found (p. 68) that there is little direct evidence one way or the other (no written inside contracts survive in the archive) so that it is not clear how, or indeed whether, IC contributed to the company's success from the 1860s. However, they cited indirect evidence from the reports of R.E. Robins, the company's treasurer.[50] As early as 1862, Robins' reports indicate that "WWC executives were knowledgeable about the total costs of IC" (although this knowledge refers to no more than knowledge of the costs being paid to the internal contractors, rather than how the piece rates for individual job workers were determined). Job workers' rates certainly do appear in the 1874-1875 wage book, the earliest to survive, and reconcile with the figures in the payroll book, indicating that there was an "integrated record-keeping system." Fleischman and Tyson [1996, pp. 69-72] argued that, although the extant wage books only date from the period in the 1870s during which the transition from IC to direct employment was gradually being introduced, the comparability of the "before" and "after" wage bills in the

[50]Robins is clearly an important figure since he had rescued the WWC, first founded in 1849, from a financial collapse suffered in the Panic of 1857, buying it at auction [Hoke, 1990, p. 188]. He then teamed up with the original founders, Aaron Dennison, the so-called "Father of American Watchmaking," and Edward Howard, to relaunch the company.

accounts suggests that "the firm knew the wages paid by the subcontractors to the underlings before their transition to day rates."

The evidence available therefore remains incomplete as to what, if any, was the impact of IC, and of its subsequent demise, on the success of WWC. Fleischman and Tyson suggested in their conclusion (p. 72) that, while the conventional "economic efficiency" arguments and the alternative "labour process" analysis both seem implausible for explaining what went on at the WWC, a "Foucauldian perspective may contribute to enrich the discussion."[51] We would agree, both in a general way and with regard to the specifics of the WWC story. We would suggest that their interpretation of the limited evidence for the nature of the detailed changes in accounting and control systems for labor there can be buttressed by looking beyond the IC process itself to locate it in what is known of the early company's wider technological and organizational development. In particular, we can trace the influences of Springfield Armory practices on both these dimensions of its development. We suggest that these influences are far more substantial than has been recognized, and that what they reveal is WWC remaking itself, in a general way, as a locus of disciplinarity.

Historians of technology have already celebrated the fact that Waltham was the first watch company to have taken up the interchangeable-part manufacture approach, as developed at the Springfield and Harper's Ferry Armories [Smith, 1985], and then to have adapted it to the very different, high-precision demands of watch making.[52] An initial debt to Springfield is clearly acknowledged in that WWC's cofounder, Dennison, first had the idea of mass-producing watches when "inspired by a

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[51]Fleischman and Tyson observed (p. 72) that "historians of the Foucauldian persuasion have not addressed specifically the issues of IC in early US industrialization." We agree that further examination is necessary, but we have examined the case of the Springfield Armory which, right from its beginning at the start of the 19th century, had its own managed work force, even though IC was normal for the industry and was used at Harper's Ferry Armory [Ezzamel et al., 1990, pp. 158, 160].

[52]As Hoke [1990, pp. 181-182] pointed out, this entailed adopting the system's key features as "a model-based system" which therefore required "gauges made to fit the model, interchangeable parts, manufacturing to fit the gauges," and then adapting this to the machine production of watch parts. This required both the design of unprecedented machines and machine tools, and a radical redesign of gauges which could pass good parts at the required microlevel of accuracy.

visit to the US Armory at Springfield" [Hoke, 1990, p. 181]. However, this visit alone did not make for a successful enterprise since the company, as noted, went under in 1857 before being rescued by Robins. It appears that, as with arms manufacture before it, the technological transformation problems proved unanticipatedly huge and vastly expensive in both time and money terms.[53]

It is at the subsequent stage of relaunch, however, that a move to disciplinarity, largely shaped by Springfield Armory technical and organizational practice, seems to have gathered momentum. The historical record indicates that the company moved impressively fast, from 1858 on, to solve its technical problems and to become economically successful. By the early 1860s, it had achieved step increases in productivity. Whereas in 1854, it took 21 man-days to produce one watch, by 1862 the time was down to three days [Hoke, 1990, p. 250]. The associated savings in cost per unit were dramatic, if unrepeatable. Subsequent to 1862, when another financial failure loomed with the onset of the Civil War, production levels and profits soared. The original company had produced less than 5,000 watches from 1849 to 1857, but now WWC produced 38,103 watches in 1864 and totaled over 18 million by 1910 [Hoke, 1990, p. 184].

No doubt a number of factors contributed to this turnaround. The increasing success of the move towards automated part-production was one. The contingent intervention of the Civil War was another, as the market for domestically produced watches took off with the virtual disappearance of foreign watches.[54] A third factor would seem to have been an insightful

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[53]We have noted before [Hoskin and Macve, 1994a, p. 24, fn. 10] Smith's [1985, p. 86] estimate that the arms-making uniformity project involved a total investment of over $2 million in 19th century prices, spread over 40 years before reaching success in the 1840s. The time and dollar investment was much less for this second-phase industry, but we note the comments of Dennison's partner, Edward Howard. Reflecting well after the financial collapse and rebirth of WWC, he observed [Hoke, 1990, p. 189]: "When I look back . . . I am astonished at the endurance and perseverance with which I stuck to the task. . . . Could I have seen beforehand the trials and tribulations, I never should have made the first movement. Millions would not tempt me to go over the same ground." These constitute two interesting asides on the viability of the theory that we criticized above that successful organizational transformations are the result of the rational, comparative calculation of transaction costs.

[54]The effects of the Civil War initially included huge financial hardship, hence a near collapse in 1862. The work force, Robins notes, agreed to forego

application of strategic thinking given this sudden market opportunity. On the one hand, production seems to have been targeted to maximize consumer choice and capture a wide swathe of the market. A full product line was on sale by 1864, led by the $13 Wm. Ellery grade which acquired brand value as "the so-called *Soldier's Watch*" [Hoke, 1990, p. 248].[55] By 1867, there were 24 grades of watch, basically assembled from the same standard parts and differentiated by the quality of relatively few of these, such as the jeweling, balance type, and regulator type [Hoke, 1990, p. 183]. On the other hand, Robins, and presumably the Board, evinced a strong sense of the importance of investing to maintain technological leadership, even to the detriment of short-term dividends. In 1862 the dividend was passed, and in 1867 it was cut back.[56]

Thus, by 1870, WWC had become a highly profitable and productive company, resurrected from the ashes of a dozen years before; a company, furthermore, which was well aware of the joint importance of long-term thinking and short-term effectiveness. A drive towards automation via research and investment was one priority, but this was matched by considerable market awareness and an effective approach to coordi-

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up to 50% of their wages that year, contributing greatly to keeping the concern going [1862 Report, cited by Fleischman and Tyson, 1996, p. 69]. At the same time, no 1862 dividend was declared [Hoke, 1990, p. 251]. Given that in 1871 over 40% of the work force were shareholders, it is possible, if not likely, that some in 1862 took a double hit. Subsequently, the War had beneficial effects, not only in terms of the market opportunity it created, but also through an inflation which helped to ease debt repayment. Striking dividend rewards ensued in 1864-1867.

[55]This strategy casts doubt on the allegation that IC systems reflect a producer rather than a customer-oriented or marketing ethos, reflected, for example, in Brown's comments cited by Fleischman and Tyson [1996, p. 64]. Somewhat surprisingly, a similar allegation was still being made about WWC in the 1880s, after the demise of IC there [see Moore's comments cited by Fleischman and Tyson, 1996, pp. 67-68].

[56]In the 1867 report, Robins notes that the Board has resolved to "vigorously press the manufacture" via increased mechanization, as "the only way open to us by which to recede the cost of manufacturing," even should the "result of such a course . . . be naturally to leave us temporarily without dividends" [Hoke, 1990, p. 316]. In this regard, it is interesting to contrast the belief of Clark at Dowlais in the 1850s that he would never have been able to persuade a stockholders' meeting of the necessity of a similar long-term strategy of belt-tightening, investment, and expansion to overcome imminent disaster.

nating a low-unit-cost, high-productivity, production regime.[57] WWC might therefore be seen, in the context of its time, as a pioneer of world-class manufacturing.

The value of a disciplinary analysis, certainly in comparison to a labor process one at least, seems clear. Controlling the labor process was only one factor. WWC's success came through the first-mover advantages it achieved and then maintained by the application of differing forms of disciplinary knowledge, including engineering knowledge, financial calculation, and market-sensitive planning. It was the interplay of this set of disciplinary practices that made this an organized entity.

At the same time, the fashioning of business opportunities out of Springfield disciplinary practices is striking. To give just one example, one procedure followed at Springfield was stamping a serial number on each musket, both to keep track of issues and to facilitate the provision of appropriate replacement parts. As early as 1858, WWC had turned this process into a marketing opportunity, advertising replacement parts by mail purely "by sending the serial number and describing the part" [Hoke, 1990, p. 246]. This implies that batch production to stock was large enough, or replacement-part production reliable enough, to produce any required part to order. In addition, as Hoke [1990, p. 246] observed, it implies that "the company had a sufficiently sophisticated record-keeping system to provide the needed data."

But it is in the wider integration of record keeping with target setting into a general systematization of work across the factory that the Springfield Armory precedents seem particularly influential. At this early stage, productivity gains and cost reductions were not achievable through automation alone, since, as Hoke [1990, p. 182] stressed, only part manufacture, not assembly, was automated, down through the 1880s at least. As yet:

> . . . Waltham's mechanics, like their counterparts in the typewriter industry, perfected the techniques to mass

[57]Both goals come across in the data set out in Hoke's [1990] tables. Machinery investment goes up year on year even in the crisis year of 1862. The reduction in man-days of labor per watch continues though at a lower rate, down to 2.2 in 1883 and 1.5 in 1905. The ratio of labor to output appears to have been tracked as an important key to profitability. Robins, in his 1867 report, observes that "the gain in number of watches made [has been] . . . forty percent, while the average number of hands has . . . increased . . . about 12+%" [Hoke, 1990, p. 248].

produce parts, but still relied heavily on hand assembly and adjusting.

Much of WWC's economic success therefore came from its success in implementing system across this great divide. That system was not simply given, but made. Based on Hoke's evidence, it appears to have been made by directly copying the Springfield disciplinary organizational regime, along with adopting its commitment to developing as much automation as possible, via research in the machine shop. As Hoke [1990, p. 181] put it: "The most important transfer of technology from the armories to the watch factories was the imposition of a rigid system of organization and the elevation of the machine shop to a position of supremacy."[58]

From among the skilled mechanics hired following the refinancing of 1858, Hoke [1990, pp. 189-190] singled out a few key individuals, in particular James Shepard, who was hired directly from the Armory, and Ambrose Webster, who "came via the Springfield Tool Company having served an apprenticeship at the Springfield Armory." According to Edward Marsh, who came as Webster's apprentice and later rose to be general manager and the company's historian, Webster was the most significant single individual in the reorganization of the work process, the man who realized "the imperative need of 'system' in creating and maintaining a successful manufacturing enterprise" [Hoke, 1990, p. 191]. Marsh credits Webster with the two crucial innovations: (1) securing agreement for treating the machining department not as a "burden" but as the potential source of competitive advantage via its research into automation; and (2) applying "system" via a standardizing principle. This he introduced first within the machine shop which then "led to the standardization of sizes of certain 'spindles' and

[58]The manufacturing situation was, in this respect, precisely analogous to that at Springfield where, up until the Civil War, parts were also increasingly manufactured by machine but still assembled manually. But then, the whole point of Tyler's study there had been to impose time and performance standards on each individual task, whether manufacturing or assembly, in order to speed up and smooth the overall production of the musket as a whole, including the transfer of work-in-progress from shop to shop. This was the heart of the Springfield system, where the outcome had been that even highly skilled manufacturing tasks undertaken by hand, such as barrelwelding, showed the disciplinary outcome of productivity rises combined with falls in unit costs from 1841 on [Hoskin and Macve, 1988, pp. 44-45].

'bushings' which were common to a variety of uses" [Marsh, cited in Hoke, 1990, p. 191].

This standardized approach to parts was combined with a normalization of activity within departments and its coordination across the whole manufacturing process. It is not clear if Hoke saw this as all due to Webster. On the one hand, he [1990, p. 191] credited Webster for having been "able to structure the work within the factory, and insist on a series of standard measurements to which the individual operatives were required to conform." On the other, when discussing factory organization in more detail, Hoke [1990, p. 242] simply said:

> At least as early as 1863, and probably by 1857, the Waltham Watch Company developed functionally differentiated departments staffed by a highly skilled and specialized workforce coordinated by the Superintendent.

In either event, Hoke was here describing an organizational setup precisely like that implemented at Springfield in 1841-1842 under Daniel Tyler's direction [Hoskin and Macve, 1994a]. Furthermore, as at Springfield, the primary evidence indicates an immediate and dramatic economic effect, with the fall in man-days production per watch from 21 to 3. In the absence as yet of clear archival proof one way or the other, our own application of Occam's razor would suggest that the most likely source of this whole set of innovations, technological and organizational, is the Springfield Armory, with the means of its adoption being the men who had worked there.

What we therefore perceive, in more general terms, is a translation of disciplinarity in both its aspects. As we see it, the expert disciplinary knowledge of the engineer was put to work to solve a new series of technological challenges which, if solved, were seen as having huge potential economic payoff. The coordination and control of work, period by period and project by project, was made subject to constant writing, examining, and grading. Whatever its precise form may have been, accounting was clearly integral to this process. At the strategic level, there was a value calculus within which possible future outcomes were weighed, while in the everyday practice of management there was planning and appraisal of cost and production levels. Thus, a new industrial mass-production sector was born, wherein the visible hand would henceforward rule and where, as Chandler has recognized, new entrants could only

compete by adopting and hoping to improve on the same visible-hand advantages.[59]

What, then, was the significance of the IC system in the WWC story, and how does a disciplinary analysis enrich our understanding of it? We suggest, tentatively, that the continuation of IC until the 1870s may well have been one of those contingent outcomes that frequently accompanies a major transformation. Given the prevalence of IC systems in early 19th century private-sector companies, we surmise that IC was already widely established in the watch-making industry.

Given the dependence on hand assembly, there would be no particular reason for its abandonment, and perhaps some cost in dissatisfaction among key worker/managers. Therefore, so long as work coordination could be rendered susceptible to system, it was unimportant whether the IC system itself was replaced or not. What mattered, in implementing system, was the panoply of disciplinary practices. What specifically made the organizational difference was the importation of the range of such practices from Springfield through the insider knowledge of men such as Webster, supported by the Board. The fact that an IC system had not been used at the Springfield Armory would therefore be of no real significance.

We may suppose that, as a tradeoff, an existing culture of IC was allowed to remain in place, except that, as in so many classic tradeoffs, the existing culture was thereby irrevocably remade, given its relentless circumscription by the new disciplinary regime. Here Fleischman and Tyson's [1996] arguments about the level of managerial knowledge about labor at WWC under IC fit with our own interpretation. IC was then, presum-

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[59]Unsurprisingly, the first would-be competitor firm, the Nashua Watch Company, was formed by a breakaway group of WWC mechanics in 1859 who "attempted to manufacture the first mass produced *precision* American timekeeper" [Hoke, 1990, pp. 189, 197]. Unlike WWC, Nashua did go bankrupt in 1862, and many of its key workers were then hired back, along with their expertise and design improvements. Indeed, a "Nashua Department" remained as a separate wing within WWC, "producing the company's high grade + plate movements" [Hoke, 1990, p. 255]. (We do not know whether or not this was also an IC unit.) In any event, competition, and the hiring away of key employees, continued apace. WWC's major competitor from the mid-1860s was the Elgin National Watch Company, founded in 1864, which hired seven WWC men, including Charles Moseley as the factory's superintendent. Thus, a Latour-style network [Latour, 1987] of expert men and knowledge developed new nodal points in a way that made the boundaries of particular organizational "structures" supernumerary.

ably, maintainable into the 1870s because it was not a serious detriment to the effective management of the company, either at the day-to-day or strategic levels. Equally, though, it appears from Fleischman and Tyson's analysis not to have commanded any great allegiance by then. It seems to have been discarded with minimal disruption, with the foremen becoming straightforward line managers within the hierarchical structure. Perhaps the erstwhile contractors had indeed become, as Fleischman and Tyson suggested, members of a managerial hierarchy in all but name, and so were relieved in the end to be freed from any residual demands of the IC system. Perhaps its demise was connected with the advancing automation of the production process and with the new managerial challenges posed as assembly also became increasingly automated.

In any event, what we would then see is a more general dissemination of the disciplinary practices first introduced into the economic world at Springfield, as on the railroads, to begin remaking the economy in general.[60] By 1900, production at

[60]We recognize that not all have bought this scenario, even where the evidence appears strong. For instance, Hoke himself [1990, pp. 253-254] concluded his analysis by saying that, although "watch factory mechanics and entrepreneurs were initially enthralled with armory practice, and several mechanics employed at Waltham had previously worked at the Springfield Armory," in the end "these mechanics borrowed very little from the Armory directly." At the same time, Hoke's overall thesis is that the rise of the American System of manufactures was really the result of private-sector effort, carried through by the "Ingenious Yankees" of his book's title. Against that conclusion, we would point out that, on his own evidence, the two sectors where genuine modern, high-tech manufacturing was successfully achieved were watch and typewriter manufacturing. In both, one may discern the importance of the Springfield Armory connection, once one abandons a focus on industry-specific emendations of the Springfield template. We have summarized the evidence concerning WWC here. The typewriter case is perhaps less crucial, since it comes later, with the first successful handmade, mechanical typewriters dating to the early 1870s, and the first version of mass production at Remington's, to 1873 [Hoke, 1990, pp. 146-149]. But Remington, of course, had its own earlier Springfield connection. Having begun as an arms manufacturer, it was now looking to expand its generic skills to new potential products and markets, such as sewing machines. Its first move in each case was therefore, on the Springfield model, to produce a "pattern machine, by which the rest are to be manufactured." It is not clear how effective the work-discipline was at Remington. Perhaps because of this diversification, it failed and was relaunched in the 1880s. The application of system may nonetheless be discernible in the organization of typewriter production; by 1886, Remington carried out subassembly in three departments before final inspection [Hoke, 1990, p. 167]. But by this time, a more generalized move to work-discipline

WWC was driven by "pneumatically controlled, self-feeding, self-acting, self-gauging, automatic machine tools." Perhaps as early as 1890, women were sitting at banks of automatic machine tools on "roller chairs." These were set on "miniature railroad tracks in front of some benches which allowed an operative to slide her wheeled chair past a row of automatic machines, inserting wire into one end of each machine and collecting finished, interchangeable parts from the other end" [Hoke, 1990, p. 181]. At which point, the genealogy of managerialism moves on yet another generation, reproducing Dennison's own experience on his visit to the Springfield Armory. As Hoke [1990, p. 255] remarked, in concluding the WWC episode: "Henry Ford was reportedly inspired to manufacture automobiles by his trip through the WWC."[61]

REFERENCES

Alder, K. (1997), *Engineering the Revolution: Arms and Enlightenment in France, 1763-1815* (Princeton, NJ: Princeton University Press).

Armstrong, P. (1985), "Changing Managerial Control Strategies: The Role of Competition between Accountancy and other Organisational Professions," *Accounting, Organizations and Society*, Vol. 10, No. 2: 129-148.

Best, M. (1990), *The New Competition: Institutions of Industrial Restructuring* (Cambridge: Polity Press).

Bhimani, A. (1998a), review of Boyns, T., Edwards, J. R., and Nikitin, M., *The Birth of Industrial Accounting in France and Britain*, in *Accounting, Business and Financial History*, Vol. 8, No. 3: 394-397.

Bhimani, A. (1998b), "Knowledge, Motivation and Accounting Form: An Historical Exploration," *European Accounting Review*, Vol. 7, No.1: 1-30.

Boyns, T. and Edwards, J.R. (1996), "The Development of Accounting in Mid-nineteenth Century Britain: A Non-disciplinary View," *Accounting, Auditing and Accountability Journal*, Vol. 9, No. 3: 40-60.

Boyns, T. and Edwards, J.R. (1997a), "Cost and Management Accounting in Early Victorian Britain: A Chandleresque Analysis?," *Management Accounting Research*, Vol. 8: 19-46.

Boyns, T. and Edwards, J.R. (1997b), "The Construction of Cost Accounting Systems in Britain to 1900: The Case of the Coal, Iron and Steel Industries," *Business History*, Vol. 39, No. 3: 1-29.

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was disseminating across many industrial sectors as a necessary response to the visible-hand revolution. Indeed, Tyler's Springfield study was about to be invented anew as the time-and-motion study by F.W. Taylor [Miller and O'Leary, 1987; Fleischman, 2000].

[61]Such networks extended from other West Point sites also, not only via the route of other U.S. universities to the first business schools or through military institutions, but also, for example, from Haupt on the Pennsylvania, through the military-industrial linkages of the Civil War, to the steel industry through industrialists like Andrew Carnegie, and then beyond [see Hoskin et al., 1998].

Boyns, T., Edwards, J. R., and Nikitin, M. (1997a), *The Birth of Industrial Accounting in France and Britain* (New York: Garland Publishing, Inc.).

Boyns, T., Edwards, J. R., and Nikitin, M. (1997b), "The Development of Industrial Accounting in Britain and France before 1880: A Comparative Study of Accounting Literature and Practice," *European Accounting Review*, Vol. 6, No. 3: 393-437.

Braverman, H. (1974), *Labour and Monopoly Capital* (New York, NY: Monthly Review Press).

Brunsson, N. (1989), *The Organization of Hypocrisy: Talk, Decisions and Actions in Organizations* (Chichester: John Wiley).

Carnegie, G.D. and Napier, C.J. (1996), "Critical and Interpretative Histories: Insights into Accounting's Present and Future through its Past," *Accounting, Auditing and Accountability Journal*, Vol. 9, No. 3: 7-39.

Casson, M. (1997), "Institutional Economics and Business History: A Way Forward?," *Business History*, Vol. 39, No. 4: 151-171.

Chandler, A.D. (1962), *Strategy and Structure* (Cambridge, MA: Harvard University Press).

Chandler, A.D. (1965), "The Railroads: Pioneers in Modern Corporate Management," *Business History Review*, Vol. 39, No. 1: 16-40

Chandler, A.D. (1977), *The Visible Hand* (Cambridge, MA: Harvard University Press).

Chandler, A.D. (1990), *Scale and Scope* (Cambridge, MA: Harvard University Press).

Clawson, D. (1980), *Bureaucracy and the Labor Process: The Transformation of US Industry, 1860-1920* (New York, NY: Monthly Review Press).

Coase, R.H. (1937), "The Nature of the Firm," *Economica,* N.S., Vol. 4, No. 4: 331-351.

Coase, R.H. (1938), "Business Organisation and the Accountant," *The Accountant*, October 1-December 17, reprinted in Solomons, D. (ed.) (1952), *Studies in Costing* (London: Sweet & Maxwell, Ltd): 105-158.

Defert, D. (1991), " 'Popular Life' and Insurance Technology," in Burchell, G., Gordon, C., and Miller, P. (eds.), *The Foucault Effect: Studies in Governmentality* (London: Harvester Wheatsheaf).

Derrida, J. (1976), *Of Grammatology* (Baltimore: Johns Hopkins University Press).

de Ste. Croix, G.E.M. (1981), *The Class Struggle in the Ancient Greek World* (London: Duckworth).

Edey, H.C. (1970), "The Nature of Profit," *Accounting and Business Research,* Vol. 1, No. 1: 50-55.

Edwards, J.R. Boyns, T., and Anderson, M. (1995), "British Cost Accounting Development: Continuity and Change," *Accounting Historians Journal*, Vol. 22, No. 2: 1-41.

Englander, E.J. (1987), "The Inside Contract System of Production and Organization: A Neglected Aspect of the History of the Firm," *Labor History*, Vol. 28, No. 4: 429-446.

Ewald, F. (1991), "Insurance and Risk," in Burchell, G., Gordon, C., and Miller, P. (eds.), *The Foucault Effect: Studies in Governmentality* (London: Harvester Wheatsheaf).

Ezzamel, M., Hoskin, K.W., and Macve, R.H. (1990), "Managing it All by Numbers: A Review of Johnson & Kaplan's *Relevance Lost*," *Accounting and Business Research*, Vol. 20, No. 78: 153-166.

Feltham, G.A. and Xie, J. (1994), "Performance Measure Congruity and Diversity in Multi-Task Principal/Agent Relations," *Accounting Review*, Vol. 69, No. 3: 429-453.

Fleischman, R.K. (2000), "Completing the Triangle: Taylorism and the Paradigms," *Accounting, Auditing and Accountability Journal*, forthcoming.

Fleischman, R.K., Hoskin, K.W., and Macve, R.H. (1995), "The Boulton & Watt Case: The Crux of Alternative Approaches to Accounting History?," *Accounting and Business Research*, Vol. 25, No. 99: 162-176.

Fleischman, R.K. and Macve, R.H. (2000), "Coals from Newcastle: Alternative Histories of Cost and Management Accounting in North-East Coal Mining during the British Industrial Revolution," John Carroll University / LSE working paper.

Fleischman, R.K., Mills, P., and Tyson, T.N. (1996), "A Theoretical Primer for Evaluating and Conducting Historical Research in Accounting," *Accounting History*, Vol. 1, No. 1: 55-75.

Fleischman, R.K. and Parker, L.D. (1991), "British Entrepreneurs and Pre-industrial Revolution Evidence of Cost Management," *Accounting Review*, Vol. 66, No. 2: 361-375.

Fleischman, R.K. and Parker, L.D. (1992), "The Cost-accounting Environment in the British Industrial Revolution Iron Industry," *Accounting, Business and Financial History*, Vol. 2, No. 2: 141-160.

Fleischman, R.K. and Parker, L.D. (1997), *What is Past is Prologue: Cost Accounting in the British Industrial Revolution, 1760-1850* (New York: Garland Publishing, Inc.).

Fleischman, R.K. and Tyson, T.N. (1996), "Inside Contracting at the Waltham Watch Company: Reassessing the Economic Rationalist and Labour Process Perspectives," *Accounting, Auditing and Accountability Journal*, Vol. 9, No. 3: 61-78.

Foucault, M. (1977), *Discipline and Punish* (London: Allen Lane).

Funnell, W. (1996), "Preserving History in Accounting: Seeking Common Ground Between 'New' and 'Old' Accounting History," *Accounting, Auditing and Accountability Journal*, Vol. 9, No. 4: 38-64.

Funnell, W. (1998), "The Narrative and its Place in the New Accounting History: The Rise of the New Counternarrative," *Accounting, Auditing and Accountability Journal*, Vol. 11, No. 2: 142-162.

Giddens, A. (1991), *Modernity and Self-Identity: Self and Society in the Late Modern Age* (Cambridge: Polity Press).

Giddens, A. (1999), *Runaway World* (Cambridge: Polity Press).

Gietzmann, M. (1995), "Introduction to Agency Theory in Management Accounting," in Ashton, D., Hopper, T., and Scapens, R.W. (eds.), *Issues in Management Accounting*, 2nd ed. (London: Prentice Hall): 259-271.

Gwilliam, D.R., Hoskin, K.W., and Macve, R.H. (1992), "Financial Control in the Financial Services Industry: The Case of Lloyd's of London," in Ezzamel, M. and Heathfield, D. (eds.), *Perspectives on Financial Control* (London: Chapman & Hall): 203-228.

Gwilliam, D., Macve, R., and Meeks, G. (2000), "Principals and Agents in Crisis: Reforms of Accounting and Audit at Lloyd's in 1982-6," Cambridge University working paper.

Hacking, I. (1990), *The Taming of Chance* (Cambridge: Cambridge University Press).

Hannah, L (1983), *The Rise of the Corporate Economy*, 2nd ed. (London: Methuen).

Hannah, L (1991), "Scale and Scope: Towards a European Visible Hand," *Business History*, Vol. 33, No. 2: 297-309.

Hoke, D.R. (1990), *Ingenious Yankees: The Rise of the American System of Manufactures in the Private Sector* (New York, NY: Columbia University Press).

Hopper,T. and Armstrong, P. (1991), "Cost Accounting, Controlling Labour and the Rise of Conglomerates," *Accounting, Organizations and Society*, Vol. 16, No. 5: 405-438.

Hoskin, K. (1993) "Education and the Genesis of Disciplinarity: The Unexpected Reversal," in Messer-Davidow, E., Shumway, D.R., and Sylvan, D.J. (eds.), *Knowledges: Historical and Critical Studies in Disciplinarity* (Charlottesville: University of Virginia Press): 271-304.

Hoskin, K. (1994), "Boxing Clever: For, Against and Beyond Foucault in the Battle of Accounting Theory," *Critical Perspectives on Accounting*, Vol. 5, No. 1: 57-85.

Hoskin, K. and Macve, R. (1986), "Accounting and the Examination: A Genealogy of Disciplinary Power," *Accounting, Organizations and Society*, Vol. 11, No. 2:105-136.

Hoskin, K. and Macve, R. (1988), "The Genesis of Accountability: The West Point Connections," *Accounting, Organizations and Society*, Vol. 13, No. 1: 37-73.

Hoskin, K.W. and Macve, R.H. (1990), "Understanding Modern Management," *University of Wales Business and Economics Review*, No. 5: 17-22.

Hoskin, K. and Macve, R. (1993), "Accounting as Discipline: The Overlooked Supplement," in Messer-Davidow, E., Shumway, D.R., and Sylvan, D.J. (eds.), *Knowledges: Historical and Critical Studies in Disciplinarity* (Charlottesville: University Press of Virginia): 25-53.

Hoskin, K. and Macve, R. (1994a), "Reappraising the Genesis of Managerialism: A Re-examination of the Role of Accounting at the Springfield Armory, 1815-45," *Accounting, Auditing and Accountability Journal*, Vol. 7, No. 2: 4-29.

Hoskin, K. and Macve, R. (1994b),"Writing, Examining, Disciplining: The Genesis of Accounting's Modern Power," in Hopwood, A. and Miller, P. (eds.), *Accounting as Social and Institutional Practice* (Cambridge: Cambridge University Press): 67-97.

Hoskin, K. and Macve, R. (1996), "The Lawrence Manufacturing Co.: A Note on Early Cost Accounting in US Textile Mills," *Accounting, Business and Financial History*, Vol. 6, No. 3: 337-361.

Hoskin, K. and Macve, R. (2000), *The Power of Accounting* (Oxford: Oxford University Press), forthcoming.

Hoskin, K., Macve, R., and Stone, J. (1998), "Business and Military Strategy in the Mid-Nineteenth Century U.S.: The Emergence of a Modern Discourse," King's College, London working paper.

Jensen, M.C. and Meckling, W.H. (1976), "Theory of the Firm, Managerial Behavior, Agency Costs and Ownership Structure," *Journal of Financial Economics*, Vol. 3, No. 4: 305-360.

Johnson, H.T. and Kaplan, R.S. (1987), *Relevance Lost: The Rise and Fall of Management Accounting* (Boston, MA: Harvard Business School Press).

Jones, G. (1994), "British Multinationals and British Business since 1850," in Kirby, M.W. and Rose, M.B. (eds.), *Business Enterprise in Modern Britain: From the Eighteenth to the Twentieth Century* (London and New York: Routledge).

Jones, H. (1985), *Accounting, Costing and Cost Estimation: Welsh Industry 1700-1830* (Cardiff: University of Wales Press).

Jones, S.R.H. (1997), "Transaction Costs and the Theory of the Firm: The Scope and Limitations of the New Institutional Approach," *Business History*, Vol. 39, No. 4: 9-25.

Kay, J. (1993), *Foundations of Corporate Success* (Oxford: Oxford University Press).

Latour, B. (1987), *Science in Action* (Cambridge, MA: Harvard University Press).

Levenstein, M. (1998), *Accounting for Growth: Information Systems and the Creation of the Large Corporation* (Stanford, CA: Stanford University Press).

Littler, C.R. (1982), *The Development of the Labour Process in Capitalist Societies: A Comparative Analysis of Britain, Japan and the U.S.* (London: Heinemann).

Loft, A. (1995), "The History of Management Accounting: Relevance Found," in Ashton, D., Hopper, T., and Scapens, R.W. (eds.), *Issues in Management Accounting*, 2nd ed. (London: Prentice- Hall): 21-44.

Lubar, S. (1983), "Corporate and Urban Contexts of Textile Technology in Nineteenth Century Lowell, Massachussetts: A Study of the Social Nature of Technological Knowledge," unpublished Ph.D. dissertation, University of Chicago.

Lubar, S. (1984), "Managerial Structure and Technological Style: The Lowell Mills, 1821-1880," *Business and Economic History,* 2nd ser., Vol. 13: 20-30.

Macve, R.H. (1985), "Some Glosses on 'Greek and Roman Accounting,'" in Yamey, B.S. and Parker, R.H. (eds.), *Accounting History: Some British Contributions* (Oxford: Oxford University Press): 57-87.

Macve, R.H. (1997), *A Conceptual Framework for Financial Accounting and Reporting: Vision, Tool or Threat?* (New York and London: Garland Publishing, Inc.).

Macve, R.H. (1999), "*Capital* and Financial Accounting: A Commentary on Bryer's 'A Marxist Critique of the FASB's Conceptual Framework,'" *Critical Perspectives on Accounting*, Vol. 10, No. 5: 591-613.

Matthews, D., Anderson, M., and Edwards, J.R. (1998), *The Priesthood of Industry: The Rise of the Professional Accountant in British Industry* (Oxford: Oxford University Press).

McKendrick, N. (1970), "Josiah Wedgwood and Cost Accounting in the Industrial Revolution," *Economic History Review*, 2nd ser., Vol. 23, Vo. 1: 45-67.

Megill, A. (1979). "Foucault, Structuralism and the Ends of History," *Journal of Modern History*, Vol. 51, No. 3: 451-503.

Miller, P.B. (1992), "Accounting and Objectivity: The Invention of Calculable Selves and Calculable Spaces," *Annals of Scholarship*, Vol. 9, No. 1/2: 61-86.

Miller, P.B., Hopper, T., and Laughlin, R. (1991), "The New Accounting History: An Introduction," *Accounting, Organizations and Society*, Vol. 16, No. 5/6: 395-403.

Miller, P.B. and Napier, C.J. (1993), "Genealogies of Calculation," *Accounting, Organizations and Society*, Vol. 18, No. 7/8: 631-647.

Miller, P.B. and O'Leary, T. (1987), "Accounting and the Construction of the Governable Person," *Accounting, Organizations and Society*, Vol. 12, No. 3: 235-265.

Napier, C.J. (1996a), "Academic Disdain? Economists and Accounting in Britain, 1850-1950," *Accounting, Business and Financial History*, Vol. 6, No. 3: 427-450.

Napier, C.J. (1996b), "Accounting and the Absence of a Business Economics Tradition in the United Kingdom," *European Accounting Review*, Vol. 5, No. 3: 449-481

O'Connell, C. (1985), "The Corps of Engineers and the Rise of Modern Management, 1827-1856," in Smith, M. R. (ed.), *Military Enterprise and Technological Change: Perspectives on the American Experience* (Cambridge, MA: MIT Press): 87-116.

Oldroyd, D. (1999), "Historiography, Causality and Positioning: An Unsystematic View of Accounting History," *Accounting Historians Journal*, Vol. 26, No. 1: 83-102.

Payne, P.L. (1988), *British Entrepreneurship in the Nineteenth Century*, 2nd ed. (Basingstoke: Macmillan Education).

Perrow, C. (1986), *Complex Organisations: A Critical Essay* (New York and London: McGraw-Hill).

Pollard, S. (1965), *The Genesis of Modern Management: A Study of the Industrial Revolution in Great Britain* (London: Edward Arnold).

Porter, D. (1980), "The Waltham System and Early American Textile Cost Accounting, 1813-1848," *Accounting Historians Journal*, Vol. 7, No. 1: 1-15.

Porter, T.M. (1995), *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life* (Princeton, NJ: Princeton University Press).

Power, M.K. (1997), *The Audit Society: Rituals of Verification* (Oxford: Oxford University Press).

Schmitz, C.J. (1993), *The Growth of Big Business in the United States and Western Europe, 1850-1939* (Cambridge: Cambridge University Press).

Smith, M. R. (ed.) (1985), *Military Enterprise and Technological Change: Perspectives on the American Experience* (Cambridge, MA: MIT Press).

Stone, W.E. (1973), "An Early English Cotton Mill Cost Accounting System: Charlton (sic) Mills, 1810-1889," *Accounting and Business Research*, Vol. 4, No. 17: 71-78.

Stewart, R. (1992), "Pluralizing Our Past: Foucault in Accounting History," *Accounting, Auditing and Accountability Journal*, Vol. 5, No. 2: 57-73.

Tyson, T.N. (1990), "Accounting for Labor in the Early 19th Century: The US Arms-making Experience," *Accounting Historians Journal,* Vol. 17, No. 1: 47-59.

Tyson, T.N. (1992), "The Nature and Environment of Cost Management among Early Nineteenth Century US Textile Manufacturers," *Accounting Historians Journal,* Vol. 19, No. 2: 1-23.

Tyson, T.N. (1998), "Mercantilism, Management Accounting or Managerialism? Cost Accounting in Early Nineteenth-century US Textile Mills," *Accounting, Business and Financial History*, Vol. 8, No. 2: 211-229.

Wagenhofer, A. (2000), "Accrual-Based Compensation, Depreciation and Investment Decisions," University of Graz working paper.

Ward, J. (1971), "Herman Haupt and the Development of the Pennsylvania Railroad," *Pennsylvania Magazine of History*, Vol. 95: 73-97.

Wells, M. (1978), *Accounting for Common Costs* (Champaign, IL: Stipes).

Williamson, O.E. (1985), *The Economic Institutions of Capitalism: Firms, Markets and Relational Contracting* (New York, NY: The Free Press).

Wilson, J.F. (1995), *British Business History, 1720-1994* (Manchester: Manchester University Press).

Yamey, B.S. (1949), "Scientific Bookkeeping and the Rise of Capitalism," *Economic History Review*, Vol. 1, No. 2/3: 99-117.

Yamey, B.S. (1977), "Some Topics in the History of Financial Accounting in England, 1500-1900," in Baxter, W.T. and Davidson S. (eds.), *Studies in Accounting* (London: ICAEW): 11-34.

Special Section of
***THE* EUROPEAN ACCOUNTING REVIEW**
On
Mapping Variety in the History of Accounting and Management Practices

Guest Editors: Salvador Carmona & Luca Zan

CALL FOR PAPERS

Research in accounting and management history has attracted considerable academic interest during the past decades. The academic debate has witnessed both the emergence of new forms of inquiry and interpretation of accounting and management practices (e.g., the New Accounting History) and the increasing reputation of Conventional Accounting History research. Accounting history research, accordingly, has become a constitutive element for the overall accounting research agenda. The European Institute for Advanced Studies in Management (EIASM) echoed the rising importance of the field and launched a series of accounting and management history workshops to dynamize research and interaction among interested scholars.

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PLURALISTIC APPROACHES TO KNOWING MORE: A COMMENT ON HOSKIN AND MACVE

INTRODUCTION

In the early 1990s, there emerged a growing view, popularized through the pages of important research journals such as *Accounting, Organizations and Society* and *Critical Perspectives on Accounting*, that traditional historical accounting research was in some senses inferior to the "new accounting history."[1] The term "new accounting history" encompassed a number of methodologies designed to produce what has become known as "critical accounting history." Among these methodologies, the work of Foucauldians, particularly that of Professors Hoskin and Macve, focuses on areas of particular interest to ourselves. We address their literature in some of our work[2] for the following interrelated reasons. First, we found it difficult to understand the precise direction of their arguments concerning the position of human accountability in the development of modern managerialism and the relationship between human accountability and modern management accounting. As Funnell [1996] argued, language can create barriers, and we, like others, found this a factor in our inability to interpret in a meaningful manner the messages that Hoskin and Macve wished to convey. Second, we were keen to encourage an interchange of ideas between historians of different persuasions.

[1]This was the title of the introductory article [Miller et al., 1991] to a special issue of *Accounting, Organizations and Society*.

[2]Among our own publications, however, only Boyns and Edwards [1996] is specifically devoted to a consideration of the application to 19th century British business of Hoskin and Macve's broadly contemporary findings in the U.S. context.

Third, we perceived unwarranted criticisms from critical accounting historians of traditional accounting history.[3] Fourth, certain groups of earlier researchers were categorized, in an apparently derogatory fashion, through the use of labels such as "traditional," "economic determinist," and "economic rationalist."

BOYNS AND EDWARDS' RESEARCH

Our research has been predicated on the conviction that good management accounting history should be founded on archival evidence, widely defined. We have therefore concentrated our attention on knowing more about the use of accounting and accounting techniques in British business from the industrial revolution period, through the second half of the 19th century and into the 20th century, via archival-based research. If this should, at a later stage, make it possible either for ourselves or others to carry out grand theorizing, then this will reinforce our feeling that the research which we have undertaken has proved useful and contributed to "knowing more."

In particular, our work on 19th century British management accounting, through the analysis of archival records informed by our interpretation of contemporary texts and studies of accounting's past, has been directed at the following:

- to discover the accounting practices followed by business entities and to understand the context in which particular procedures were developed and others discarded;
- to demonstrate that there is a form of accounting outside "human accounting" that might make a serious claim to serve as an effective basis for managing a business enterprise;
- to test the impression conveyed, "perhaps unwittingly" [Boyns and Edwards, 1996, p. 40], that 19th century British developments in accounting were the same as in the U.S.;
- to press the point that accounting practices employed in Britain fit reasonably comfortably within a definition of manage-

[3]For example, see Miller and Napier's [1993, p. 631] accusation of "a priori limiting of the field of study to accounting as it currently exists, or to a particular accounting technique such as double-entry bookkeeping," and Hopper and Armstrong's [1991, p. 405] concern that "[t]raditional management accounting history has been fixated on a search for origins, on the questions of who did what first, and when."

ment accounting. Here, the concern was to counter the impression conveyed by earlier Foucauldian-based analyses that the failure of businessmen to embrace human accounting meant that they were not "doing" management accounting.

In pursuing this research agenda, we have not adopted a purely "economic rationalist" stance and have only devoted limited space to a direct consideration of the contribution of the Foucauldian school. As pointed out in Boyns et al. [1997], although we would locate ourselves within Loft's "neoclassical revisionist" school, we nevertheless accept that economic factors might not be the only ones influencing the adoption of particular practices or modes of accounting at specific points in time or space. We are aware of the fact that businessmen are not atomistic profit maximizers even if "control of costs became an essential fact of economic life for those businesses operating in a competitive environment" [Boyns and Edwards, 1995, p. 32]. Also, we have specifically acknowledged the fact that the socio-political and historical contexts of a period could significantly influence events and outcomes [Boyns et al., 1997, p. 5]. Hence, we consider it disingenuous for critical accounting historians to imply, as part of the legitimization of their own work, that traditional accounting historians have ignored non-economic contextual factors. We are equally puzzled by the idea, expressed in Hoskin and Macve's paper, that we have "attacked" their work. At most, we have argued, perhaps defensively, against the idea that management accounting amounts to nothing more than human accounting. But the allegation of a "summary dismissal of the 'Foucauldian' approach" supposedly contained in Boyns et al. [1997], incorrectly attributed to Bhimani [1998] who we feel was equally mistaken in his finding of a "terse critique levelled at mainly Foucauldian accounting historians" [Bhimani, 1998, p. 397], is at odds with the relevant content of that text [Boyns et al., 1997, pp. 5-6].

A notable feature of Hoskin and Macve's analysis of our own research findings to date is the demonstration of complementarity rather than conflict, most significantly that, in their view, our revelations concerning British company accounting practices in the 19th century support, chronologically, their now more clearly articulated overall thesis. We have no problem with this finding since, despite Hoskin and Macve's implication, the aim of this research was not to try to prove or disprove their thesis. As indicated above, however, our principal research aim was to discover what was going on in Britain

within the limitations of our own research paradigm. Our findings of an absence of human accounting based on labor standards at Britain's largest industrial company, the Dowlais Iron Company, in the mid-19th century [Boyns and Edwards, 1996] led us to consider what other mechanisms were employed to manage a labor force that rose from 5,200 in the 1840s to 8,500 by 1866. We are more than happy if our main finding, that the management of labor in Britain at this time was carried out not through human accounting but through agents, subagents, contractors, piece rates, and the sliding scale, has helped to improve the stock of relevant case studies on which to base a theory of accounting development by accounting historians viewing the past through a different lens.

HOSKIN AND MACVE'S PRESENT POSITION

We do not wish here to challenge Hoskin and Macve point by point, an approach which might serve only to highlight differences not necessarily of any great significance. Rather, we consider *some* of the implications of their presently published position.

Hoskin and Macve's most recent paper is, in our view, a welcome clarification of their theory, formulated on the basis of a number of scholarly papers published over 15 years, of accounting's development from the beginning of the 19th century. For us, and many others, the precise direction of their arguments has not always been entirely clear. The current paper is therefore to be welcomed for attempting to set out the key stages in the development of "human accountability" in a more transparent manner, even though many of the links between the various stages still remain to be demonstrated.

The essence of Hoskin and Macve's research agenda, as now defined, stems from Miller's notion of "calculable selves in calculable spaces" [Miller, 1992]. To support their hypothesis, it will be necessary for them to prove the diffusion of human accountability from Springfield Armory, through the U.S. railroads, to Chandler's big business, and then to society as a whole. Whether or not these links can be established is a matter for future empirical research. We would see a particular problem to be whether the socio-economic context of believed recipient organizations was amenable to the adoption of accounting techniques developed within a single government military establishment. According to Hoskin and Macve, "Once forms of what we have called 'human accounting' began to become inte-

gral to the accounting field, accounting as knowledge discovered its modern status as a discipline in its own right" (p. 95). The implication here is that human accounting has become all-pervasive in business [cf. Drury et al., 1993] and, indeed, society in general. This hypothesis would seem to require evidence to show that human accounting was used extensively in the U.S. and, subsequently, through transmission to Britain.[4] Our present work on management accounting and decision making in Britain in the 20th century will, hopefully, disclose new knowledge that will help test aspects of their "historical theory."

In their paper, Hoskin and Macve suggest that the current plurality of approaches in accounting history implies that the subject has grown to maturity (p. 128) and stress that new accounting history, which has contributed to this plurality, has a "particular interest in theoretical interpretation" (p. 129). While we would not wish to disagree with the view that accounting history has come a long way during the last 15 to 20 years, and that the new accounting history has made an important contribution to this process, we would question whether the knowledge base is sufficiently robust to support broad theoretical constructions of the kind attempted by Hoskin and Macve. Indeed, the fact that Hoskin and Macve's future research agenda is to be mainly directed at filling important gaps in their newly articulated theory implies that, as yet, our knowledge of what actually happened is deficient. Indeed, the failure of the evidence to support any of the links of their developmental chain of human accountability, not merely whether they have got the Springfield Armory case right, would mean that their theory will collapse.

In our view, the preferable route towards theory construction starts with the collection of a range of relevant evidence, an approach which reflects our conviction that historical research method should be driven primarily, though of course not entirely, by an inductivist rather than deductivist approach. Despite our skepticism, we would not of course wish to deny any historian the right to develop a broad theory of accounting's development and then to establish a research agenda which helps them to prove its validity. We nevertheless feel that, given that the examination of British and U.S. business archives, let

[4]Even those who perceive accounting controls as rooted in struggles as firms attempted to control labor processes in various epochs of capitalist development believe that such arrangements are "increasingly being questioned" [Hopper and Armstrong, 1991, p. 434].

alone those in other countries, is still in its infancy, what looks like "grand theorising" may prove to be premature.

Hoskin and Macve indicate that there is an understandable concern among people who hold conventional views that reinterpretations of the evidence, in connection with the development of new ideas and theories, will inevitably appear to them as being a loss of "currently cherished knowledge" when, in fact, we will end up knowing more. We agree that the rewriting of history is an integral part of the historian's trade, and this has been a marked feature of our own work. For example, we have rewritten history when overturning views such as those of Pollard and Yamey regarding the effectiveness of accounting during the British Industrial Revolution (an outcome also effected by Fleischman and various collaborators, especially Fleischman and Parker, 1997), and the link between costing theory and practice in the late 19th century espoused by R.S. Edwards and Solomons. However, in the same way that we have rewritten the past, we expect future historians to rewrite it, adding to our work, possibly overturning our interpretations, and thereby generating more knowledge. The same, of course, can be expected of the work of other historians.

Finally, despite the impression conveyed early on in Hoskin and Macve's paper, and only partially rectified later, we do not accept all, or even many, aspects of Chandler's thesis of the development of big business globally [Chandler, 1990], and we hold parallel reservations relating to their Foucauldian-inspired analysis. While, in common with Hoskin and Macve, we find the Chandlerian framework a useful basis for locating and differentiating the nature of our own analysis, our single paper [Boyns and Edwards, 1997] directly dealing with his major works cast doubt on his espoused relationship between strategy and structure. We see Chandler's theory to be probably tenable, insofar as it applies to the U.S., but to break down when attempts are made to apply it more widely, whether to Britain, Europe, or the rest of the world. In other words, we see Chandler's M-form business as a particularly U.S. phenomenon during a specific historical period (say, c.1890s-c.1970s); that is, it was time and spatially specific, reflecting the prevailing economic, social, and historical contexts within which it flourished. Similarly with Hoskin and Macve's theory, tied as it is to Chandler's concept of the "visible hand," we remain to be convinced that it does not suffer from precisely the same criticisms that can and have been levelled at Chandler's theory [see, for example, Hannah, 1991; Supple, 1991].

CONCLUSION

Although pursuing a different research paradigm than that of Hoskin and Macve, there are possibly more areas of agreement between us than their paper might indicate. We agree with them that the basis of historical enquiry should be the examination and sifting of evidence contained in surviving accounting archives. Furthermore, and in contrast to the negativism of Miller and Napier [1993, p. 639], we would agree with Hoskin and Macve that there *is* validity in searching for origins. In our view, what is required is more archival-based research not less, as the need for Hoskin and Macve to fill in the gaps in their chain of development of human accountability shows. To date, in our view, there has been too little rather than too much archival-based research of accounting practice in business organizations in the 19th and 20th centuries (our area of interest) for *all* countries. We also concur with Hoskin and Macve's assertion that "economic rationalism [is] an insufficient explanation of accounting's role in the historical development of big business" (p. 101). Furthermore, contrary to any impression that may have been given, we favor a plurality of methodologies to enable the nature of business activity to be viewed through different lenses so as to produce complementary and competing interpretations of how and why things happen in a particular time and place. Reiterating our concluding comments in Boyns and Edwards [1996, p. 57]:

> One way forward, therefore, is not to attempt to replace the traditional historical approach by either Foucauldian, Marxist or any other approaches, but rather to find a balanced approach which allows all types of history to flourish and contribute to informed discussion between historians with differing viewpoints. For this to happen, in regard to the historical development of management accounting, we feel that a vitally necessary first step is for all those concerned to adopt a common and, we would argue, broad-based definition of the subject area.

It is only in this way that we will all know more.

REFERENCES

Bhimani, A. (1998), "Review of Boyns, T., Edwards, J. R. and Nikitin, M., *The Birth of Industrial Accounting in France and Britain*," in *Accounting, Business and Financial History*, Vol. 8, No. 3: 394-397.

Boyns, T. and Edwards, J. R. (1995), "Accounting Systems and Decision-Making in the Mid-Victorian Period: The Case of the Consett Iron Company," *Business History*, Vol. 37, No. 3: 28-51.

Boyns, T. and Edwards, J. R. (1996), "The Development of Accounting in Mid-nineteenth Century Britain: A Non-disciplinary View," *Accounting, Auditing and Accountability Journal*, Vol. 9, No. 3: 40-60.

Boyns, T. and Edwards, J. R. (1997), "Cost and Management Accounting in Early-Victorian Britain: A Chandleresque Analysis?," *Management Accounting Research*, Vol. 8, No. 1: 19-46.

Boyns, T., Edwards, J. R., and Nikitin, M. (1997), *The Birth of Industrial Accounting in France and Britain* (New York: Garland Publishing, Inc.).

Chandler, A. D., Jr. (1990), *Scale and Scope: The Dynamics of Industrial Capitalism* (Cambridge, MA: Belknap Press for Harvard University Press).

Drury, C., Braund, S., Osborne, P., and Tayles, M. (1993), *A Survey of Management Accounting Practices in UK Manufacturing Companies* (London, The Certified Association of Certified Accountants).

Fleischman, R. K. and Parker, L. D. (1997), *What is Past is Prologue: Cost Accounting in the British Industrial Revolution 1760-1850* (New York: Garland Publishing, Inc.).

Funnell, W. (1996), "Preserving History *in* Accounting: Seeking Common Ground between 'Old' and 'New' Accounting History," *Accounting, Auditing and Accountability Journal,* Vol. 9, No. 4: 38-64.

Hannah, L. (1991), "Scale and Scope: Towards a European Visible Hand," *Business History,* Vol. 33, No. 2: 297-309.

Hooper, T. and Armstrong, P. (1991), "Cost Accounting, Controlling Labour and the Rise of Conglomerates," *Accounting, Organizations and Society*, Vol. 16, No. 5/6: 405-438.

Miller, P. (1992), "Archeology and Objectivity: The Invention of Calculable Selves and Calculable Spaces," *Annals of Scholarship*, Vol. 9, No. 1/2: 61-86.

Miller, P. and Napier, C. (1993), "Genealogies of Calculation," *Accounting, Organizations and Society,* Vol. 18, No. 7/8: 631-647.

Miller, P., Hopper, T. and Laughlin, R. (1991), "The New Accounting History: An Introduction," *Accounting, Organizations and Society*, Vol. 16, No. 5/6: 395-403.

Supple, B. (1991), "Scale and Scope: Alfred Chandler and the Dynamics of Industrial Capitalism," *Economic History Review*, 2nd. ser., Vol. 46, No. 3: 500-514.

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ACCOUNTING HISTORY AND THE EMPEROR'S NEW CLOTHES: A RESPONSE TO "KNOWING MORE AS KNOWING LESS? . . . "

Abstract: Hoskin and Macve (H&M) continue to accredit certain events in the early 1840s as enabling the creation of norm-based accounting and its use to control labor and improve productivity at the Springfield Armory (SA). Although critics have refuted H&M's interpretation of these events and reproached their use of inflated language, H&M maintain their unique perspective with undiminished fervor. This rejoinder further questions the validity of H&M's perspective of U.S. accounting history. It identifies the many conventional business historians who refute it and emphasizes that no other evidence has been presented to indicate that norm-based accounting was ever employed in the U.S. before the early 1900s. It also describes how H&M have tried to bolster their position by citing several contemporary and more critical scholars who in fact refute it. More substantively, the paper emphasizes that the core debate between H&M and their critics is not simply over the timing of particular events at SA. Rather, it centers on the nature of historical evidence and the distinction between history and historicism.

INTRODUCTION

Hoskin and Macve (H&M) continue to argue that certain events at the Springfield Armory (SA) have been largely unrecognized for marking the first use of accounting to control labor and improve productivity in the U.S. Their core belief, unchanged from earlier papers [H&M, 1988, 1996], is that the confluence of performance norms and managerial discipline first occurred in 1841 at SA and transformed accounting's role from mercantilism to "managerialism." In their latest paper, H&M seek to rebut critics of this uniquely Foucaldian perspective of U.S. accounting history.

In previous papers, I have argued that H&M distorted the historical record [Tyson, 1993] and refuted their contentions that 1) norm-based accounting effectuated SA's subsequent productivity increases [Tyson, 1990], and that 2) accounting infor-

mation was *not* used for decision-making purposes before the early 1840s [Tyson, 1992, 1998]. Although H&M, in a previous draft, acknowledged that "the historical evidence does indeed illustrate a growing array of sophisticated cost and management accounting practices being developed in the early 19th century," they still misrepresent the historical record and insist that events at SA were transforming.[1]

In the present rejoinder, I discuss the more substantive issue underlying the debate between the Foucaldian and economic rationalist perspectives of accounting history—the nature and role of historical evidence. The main point of this rebuttal is that no evidence can sustain H&M's theory that accounting was used to discipline labor in the U.S. in the early 1840s. In actuality, norm-based accounting was first employed in the early 1900s when standard costing and other scientific management principles became socially acceptable. Owner/managers controlled labor and other costs of production at SA and other 19th century establishments by increasing mechanization, utilizing economies of scale, and/or reducing piecework wage rates. Even if owner/managers had wanted to identify star performers and use their methods and productivity as the benchmark for other laborers to emulate, the economic, social, and political climate of the mid-19th century work place precluded the use of accounting for labor control purposes. Skilled labor shortages, the use of internal contracting, and cost-benefit criteria are among the most important factors that explain the absence of norm-based accounting.[2]

The balance of this rejoinder is organized as follows. The next section describes the key role evidence plays in developing and sustaining theory and identifies the scholars who refute H&M's position on the timing of norm-based accounting. The paper then provides a brief overview of the U.S. industrial work

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[1]H&M continue to inflate language regarding both Daniel Tyler's time-study procedure and their critics' remarks. For example, they substitute the word "ought" for the word "could," which Tyler used in the description of his own work [Tyler, 1883]. Clearly, the word "ought" has a normative component whereas none existed in the original record. H&M (p. 115) also bend language when they write that Boyns and Edwards [1996] "themselves accept the conclusions of our work on the link between West Point and Springfield." Boyns and Edwards [1996, p. 42] actually wrote that they accepted the "analysis of the links," but that "we are not convinced that it is sufficient, in terms of their [H&M's] disciplinary thesis . . . "

[2]See Boyns and Edwards [1996] and Tyson [1990] for a fuller discussion of these factors in the U.K. and U.S., respectively.

place of the 19th century and explains why human accountability in the form of norm-based accounting was not employed. The concluding section addresses the distinction between history and historicism and explains why H&M's perspective of U.S. accounting history is so untenable.

THE NATURE OF HISTORICAL EVIDENCE

> Evidence is a concept central to the empirical sciences. Whether to believe, or even take seriously, a scientific hypothesis or theory depends on the quantity and character of the evidence in its favour [Achinstein, 1983, p. 1].

As Achinstein indicated, and most other historians concur, evidence plays a central role in evaluating new theories and testing unproven hypotheses. Although empirical tests cannot be performed to evaluate theories about the past, interpretations that seek to countervail conventional paradigms, like economic rationalism, *must* utilize historical evidence to gain broader acceptance. Radical antipositivists might argue that evidence in the form of archival records is inherently unable to explain the past because of its subjectivity. H&M (p. 97, fn. 7) appear to ascribe to this view when they write that:

> We therefore find profoundly problematic any theory that takes as its objects of analysis the subject as rational, the organization as structure, and information as objective.

Clearly, archival evidence in the form of documents, letters, memoranda, etc. must be evaluated carefully since it could contain major factual errors or omissions, either by accident or by intent. Furthermore, important countervailing evidence might be unexamined, leading the researcher to form inappropriate conclusions. Particular evidence might also be so clearly biased or unreliable that the researcher must reject it out-of-hand. Historians acknowledge these caveats about evidence, but they do not reject its crucial role in developing and assessing theory. If all evidence were perceived as inherently biased and unreliable, then scholarly historical research would have no purpose or essence. Ginsburg [1991, p. 83] described how the rejection of evidence threatens history:

> Instead of dealing with evidence as an open window, contemporary skeptics regard it as a wall, which by definition precludes any access to reality. This extreme

> anti-positivistic attitude, which considers all referential assumptions as a theoretical naivete, turns out to be a sort of inverted positivism.

In the midst of the ten-year debate about particular events at SA, it was gratifying to see that H&M [1996] called for evidence that would support interpretations of U.S. accounting history that differ from their own. Tyson [1998] responded to the challenge by enumerating many specific points that refuted H&M's perspective. H&M now disregard many of these remarks as they maintain their perspective with vigor, although independent scholars have yet to provide a single example of "human accountability" at other 19th century locales. H&M (p. 100) still call for additional evidence but in a *significantly* different form. They now place their unique perspective on the same plateau as widely accepted, conventional paradigms:

> Our thesis remains as subject to falsification by evidence yet to come as any other. An accumulation of such evidence therefore remains essential in order to enable us to piece together more of the jigsaw of our theoretical understanding of how such developments occurred.

H&M's latest invitation begs the question as to the type of new evidence that could refute a theory of human accountability, managerialism, and norm-based accounting at SA. It is not as if SA operated in a vacuum and its activities were unknown to outsiders. Deyrup [1970] described how arms-making techniques and cost figures were routinely shared with private armorers in the early 1800s. Hindle and Lubar [1986] noted that SA inspectors held key positions at the Waltham Watch Company (WWC) and were hired for their ability to enforce work discipline. Surely, if norm-based accounting had produced the large productivity gains at SA that H&M claim, WWC and other large factories would have implemented norm-based accounting to achieve similar results.

It is also worth noting that the terminology "standard(s)," "norm(s)," or "accountability" never appeared in the SA or WWC archives or in *any* pre-1890 documents that have come to light. In actuality, these and comparable terms were first used in conjunction with the scientific management movement that began over 50 years after certain transforming events were "discovered" at SA. The absence of *any* confirming evidence surely refutes a theory that is based entirely on the interpretations one set of authors attribute to productivity data that can

be explained by a variety of factors other than norm-based accounting.[3] Clearly, the burden of proof in the form of confirming evidence rests with those proposing a new paradigm rather than those rejecting it in favor of established views.

At present, evidence and expert opinion that refute H&M's theory, impact, and time dating of human accountability at SA are both compelling and overwhelming. Renowned business historians [Chandler, 1977; Hounshell, 1984; Nelson, 1991] consistently have dated the first appearance of norm-based accounting in the U.S. to the early 1900s. Others [Faler, 1974; Nelson, 1981; Prude, 1983; Rosenberg, 1969] have explained why labor shortages and the lack of an industrial work ethic precluded owner/managers from employing accounting norms to control labor costs. Regular attendance, conscientious performance, and general sobriety were still problematic in the mid-late 19th century at SA and other factories. Achieving these attributes was a necessary prerequisite to the use of accounting norms. Furthermore, historians who discussed SA activities in summary [Benet, 1878] and in detail [Deyrup, 1970; Smith, 1977] attributed no special significance to Daniel Tyler's 1832 rate-setting activities that H&M embellish.

Perhaps most damaging to H&M's perspective are the views of contemporary and critical accounting scholars, even though H&M strongly intimate that these scholars support them. For example, H&M (p. 112) cite Miller [1992] to bolster their remarks that, "a leading characteristic of modernity, *certainly by the end of the 19th century*, is the creation of 'calculable persons in calculable spaces.'" However, Miller [1992, p. 65] wrote that, "Managerial or cost accounting as addressed here is a *twentieth century phenomenon* that has had a relatively distinct trajectory in comparison to financial reporting." Miller [1992, p. 70] also stated that,

> An early and decisive moment in the invention of the calculating self is the reformulation of cost accountancy in the factory *between 1900 and 1930* . . . The notion of standard costs, entailing the calculation of predetermined 'normal' costs against which actual costs can be compared, was at the heart of this transformation. (emphasis added)

[3]See Tyson [1990] for a detailed discussion of rationales that explain post-1841 labor productivity improvements at SA.

H&M also reference Miller and O'Leary (M&O) [1987] to support their view that human accountability first appeared at SA in the 19th century.[4] A careful examination of M&O [1987] failed to uncover any statement indicating that "calculable persons" were "created" in the 19th century. In point of fact, M&O [1987, pp. 239-240] unequivocally dated the first appearance of norm-based accounting to the 20th century:[5]

> Accounting is, we argue, an important aspect of this development of a range of calculative programmes and techniques which come to regulate the lives of individuals at work in the *early twentieth century*…It is our contention that one can understand the emergence of standard costing and budgeting in the *early years of the twentieth century* by situating it within this more general shift in the form of social life which occurs around the turn of the century. (emphasis added)

M&O cited several noted accounting authors (Dickinson, Garcke and Fells, Harrison) who had discussed why standard costs were needed to improve efficiency. They cited these authors to support the conventional view that human accountability was an innovation that first appeared in the U.S. during the early 20th century [M&O, 1987, p. 242]:

> For our concerns in this paper there is one crucial dimension to this *innovation*. The principle of standard costs made it possible to attach to every individual within the firm norms and standards of behaviour. (emphasis added)

H&M might respond that M&O were not apprised of their "discovery" at SA before submitting their seminal 1987 article for publication. However, Miller [1992] and Miller and Napier

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[4]Specifically, H&M (p. 108) write that, "our distinctive emphasis has been on the constitutive role of accounting practices and discourse in the *widespread 19th century development* of the new kind of human performance measurement which created 'calculable persons' within mass populations." (emphasis added)

[5]Aitken [1985, p. 12] provided the conventional view, which M&O [1987] clearly supported, of the conjoining of norm-based accounting with scientific management in his description of Frederick Taylor's work: "The introduction of the Taylor system of management at Watertown Arsenal was not merely a technical innovation. It was also a highly complex social change, upsetting established roles and familiar patterns of behavior, establishing new systems of authority and control, and creating new sources of insecurity, anxiety, and resentment."

[1993] were surely aware of H&M's perspective by the time these later articles were published, and they could have disassociated norm-based accounting from scientific management. As the following statement indicates, their thinking had not changed from the 1987 paper [Miller and Napier, 1993, p. 644]:

> Rather, what is important is the alliance formed between standard costing and Taylorism in seeking to make notions of efficiency operable within the enterprise so that the actions of the individual could be given a financial visibility and be related to expected standards and norms.

In summary, H&M's perspective has been refuted by prominent business historians who tie norm-based costing to scientific management in the early 1900s, and by those who fail to impute the same meaning to the 1832 and 1841 events at SA. Independent scholars have yet to provide other examples illustrating the use of norm-based accounting in the 19th century at SA, other federal armories, or private establishments. In essence, the lack of confirming evidence, the absence of other examples, and the lack of support from other scholars *completely* isolates H&M's unique perspective of U.S. accounting history. The next section provides an overview of industrial work in the U.S. during the 19th century and indicates why norm-based accounting was not a 19th century phenomenon.

INDUSTRIAL WORK IN THE 19TH CENTURY

Owner/managers who employed nonfamily employees and operated in competitive markets have always attempted to control the costs of production. Throughout the 19th century, they used piecework wages and inside subcontracting to control labor costs. Piece rates were set either for complete jobs or specific tasks that both attracted appropriately skilled workers and generated suitable profits for the contracting agent or employer. Laurie [1989, p. 64] noted that first-generation U.S. manufacturers often used the putting-out system whereby work was done in a laborer's household rather than a factory. Absent protective legal statutes or the ability to resist the wage cuts en masse that strong unions would have afforded, piece-rate reductions often forced household laborers to work 12 to 14-hour days to earn a decent living wage. As consumer markets increased and transportation networks improved and expanded, it became more cost effective to conduct work in large, integrated facilities rather than in craft shops or in domiciles.

During the pre-Civil War period at SA and other factories, owner/managers were compelled to automate production in the face of continual shortages of skilled labor [Licht, 1995].[6] Once automation was more fully achieved, owner/managers could reduce piece rates for factory laborers without experiencing shortages since less-skilled workers were more abundant and could do the work that previously required skilled craftsmen. If owner/managers wanted to improve productivity, either to increase profits or in response to competitors, they did so by stretching out the workday or speeding up the pace of work. Hindle and Lubar [1986, p. 198] described how machine pacing and market effects combined to control labor costs:

> The great cost of the machines meant the mills had to be kept running, even when the market for the product was weak. That often meant cuts in the workers' pay. And most important, the machines' steady motion insisted on a machine-like pace for the workers. The managers set the speed of the machines, and the machines set the pace of work.

Mechanization, specialization, subdivision of labor, and full integration increasingly characterized large-scale manufacturing facilities over the course of the 19th century. Factories that produced boots, shoes, clothing, and other consumer goods expanded dramatically, aided in part by technological advances and the use of steam power. Mass production techniques and interchangeable parts were two key features in the arms-making, timekeeping device, sewing machine, and similar industries. Whereas owners of small businesses had been able to perform most managerial functions themselves, owners in large factories now had to employ managers and supporting staff to oversee increasingly complex and costly operations that included marketing, production, administrative, and purchasing activities. Despite their ability to control costs through piece-rate cuts, owner/managers also needed a regular factory work force that was both predictable and disciplined in order to keep machines running and to generate the output needed to

[6]According to Hindle and Lubar [1986, p. 157], both large and small U.S. businesses favored mechanization. "Mechanization was encouraged by the economic resources of the United States. Waterpower and later steam power were cheap and available, and so American business turned to waterwheel and steam engine to drive machinery. Labor was scarce and thus expensive, and so machinery was substituted where possible."

cover the high fixed costs of capital. Thus, as Hindle and Lubar [1986] suggested, H&M correctly link the large productivity gains at both SA and WWC to greater managerial discipline that West Point training facilitated at both establishments.[7] But, in the absence of any supporting evidence, H&M go *much* too far when they conjoin norm-based accounting to managerial discipline either at SA, WWC, or any other 19th century factory.

Fleischman and Tyson [1996] examined the archives of WWC, a U.S. company that was organized in the early 1850s and was described by Clawson [1980, p. 78] as, "the first company anywhere in the world to produce watches through extensive use of machinery and interchangeability." By 1885, WWC employed 2,400 workers and operated in a highly competitive market that faced continually falling market prices for watches over time. Fleischman and Tyson examined WWC's records and did find detailed records of individual and total labor costs, but they found no evidence to suggest that norm-based accounting was ever employed. Share ownership and inside subcontracting were the mechanisms used to provide factory discipline, create incentives, and reduce labor costs. During the economic depression of the 1870s and subsequent deflationary period, WWC's subcontracting system was eliminated and former subcontractors were paid far smaller day wages. Thus, in good times and bad, and in an environment that appeared ideal, there was no evidence to indicate that accounting norms were ever contemplated, developed, or used. As H&M now note, Fleischman and Tyson [1996] found large productivity gains that were brought about, in part, by improved factory discipline. However, while West Point training enabled WWC superintendents to be more effective disciplinarians, which in conjunction with technological advances and economic forces led to significant productivity improvements, there is simply *no* evidence to support a perspective of norm-based accounting that H&M promote so fervently.

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[7]For example, Hindle and Lubar [1986, p. 232] accredited West Point training to tighter discipline at SA, noting that "the system of inspectors was part of a new, more tightly controlled system of labor at the armories . . . the managers of the armories introduced new work rules and new management techniques along with new machines. Time and materials were carefully accounted for; each workman was held responsible for his work."

DISCUSSION, SUMMARY, AND CONCLUSIONS

H&M's unique theory of accounting history has been presented in a series of papers and has drawn equally passionate rejoinders. To some, the debate may appear to be academic antler clashing at its worst, with neither side willing to let the other have the last word on a matter of little interest or importance. Hopefully, readers will recognize that the issues under debate extend far beyond whether norm-based accounting first occurred at the SA in the early 1840s or at some later date. The real issue is the far more substantive one—the use of historical evidence and the distinction between history and historicism.[8]

Historians believe in the accumulation of knowledge, the importance of evidence, and the ability to uncover truths about the past. Historians also believe that primary source materials are best able to reveal past events as they transpired. They recognize that there may be more than one interpretation that can be inferred from the same evidential material and that evidence must be evaluated carefully. Notwithstanding these caveats, historians form and defend their conclusions on the basis of the evidence (i.e., documents, reports, letters, memoranda, etc.) they examine.

Historicists are far more concerned with developing and sustaining a particular social theory or philosophy of history.[9] They are generally less encumbered to ensure the accuracy of particular events they cite since, to many, historical knowledge is inherently subjective and no accurate account of the past can ever be forthcoming. While historians prioritize facts, historicists tend to discount them in the belief that the boundary between fact and fiction is unclear and inconsequential. In the case of historicists like H&M, their Foucaldian perspective intertwines power and knowledge, discipline and punishment, and accountability and consequences, all of which are embodied in norm-based accounting.

Although H&M and I continue to dispute particular events, referents, and semantics, the rhetoric of our debate can be collapsed into several core issues. In 1986, H&M proposed a unique interpretation of accounting's potential to marry power

[8]See Walsh [1962] for a full discussion of history and historicism.

[9]Burke [1992, p. 3] attributed these perspectives to the different training that historians and sociologists receive: "Sociologists, for example, are trained to notice or formulate general rules and often screen out the exceptions. Historians learn to attend to concrete detail at the expense of general patterns."

and knowledge into a form of human accountability they call managerialism. In 1988, H&M described the confirmatory evidence they discovered and interpreted as conjoining at SA in 1841 to form accounting norms. They argued that norm-based accounting was an effective disciplinary device because of the dramatic productivity improvements that occurred subsequently. H&M have promoted their theory of managerialism ever since, but neither they nor others have provided a *single* example of norm-based accounting at other 19th century locales. Is it unfair to conclude that this new theory is creative accounting history at best, an intentional delusion at worst, or more likely the emanation of extremely clever imaginations?[10]

The historical record is clear – not one independent scholar has provided evidence that either 1) confirms that events transpired at SA as H&M suggest, 2) provides other examples of norm-based accounting in the 19th century, or 3) explains why events that transpired at SA were not duplicated for over 50 years. H&M call for evidence to refute their theory, but a theory lacking *any* supporting evidence is simply an untenable hypothesis. In essence, H&M have artfully constructed a new set of emperor's clothes, multicolored, beautifully woven, elaborately crafted and layered. In reality, they remain just an illusion, except to the emperor that is!

REFERENCES

Achinstein, P. (1983), *The Concept of Evidence* (New York: Oxford University Press).

Aitkin, H.G.J. (1985), *Scientific Management in Action* (Princeton, NJ: Princeton University Press).

Benet, S.V. (ed.) (1878), *A Collection of Annual Reports and Other Important Papers, Relating to the Ordnance Department,* Vol. 1 (Washington: Government Printing Office).

Boyns, T. and Edwards, J.R. (1996), "The Development of Accounting in Mid-Nineteenth Century Britain: A Non-Disciplinary View," *Accounting Auditing and Accountability Journal*, Vol. 9, No. 3: 40-60.

Burke, P. (1992), *History & Social Theory* (Ithaca, NY: Cornell University Press).

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[10]Himmelfarb [1987, p. 100] captured my sentiments when she wrote that, "It is a challenging task that confronts the new history, and one can understand why the brightest and most ambitious are attracted to it. It is an exciting game to ferret out whatever facts one can, however and wherever one can, and to make of them whatever one can, by way of deduction, generalization, extrapolation, supposition, intuition, imagination. Only a crotchety old historian would throw a damper on the festivities by pointing out that the results, more often than not, are thoroughly speculative and problematic . . ."

Chandler, A.D., Jr. (1977), *The Visible Hand*: *The Managerial Revolution in American Business* (Cambridge: Harvard University Press).

Clawson, D. (1980), *Bureaucracy and the Labor Process: The Transformation of US Industry, 1860-1920* (New York: Monthly Review Press).

Deyrup, F.J. (1970), *Arms Making in the Connecticut Valley* (York, PA: George Shumway).

Faler, P. (1974), "Cultural Aspects of the Industrial Revolution: Lynn, Massachusetts Shoemakers and Industrial Morality, 1820-1860," *Labor History*, Vol. 15, No. 3: 367-394.

Fleischman, R. and Tyson, T.N. (1996), "Inside Contracting at the Waltham Watch Company: Reassessing the Economic Rationalist and Labour Process Perspectives," *Accounting, Auditing, and Accountability Journal*, Vol. 9, No. 3: 61-78.

Ginsberg, C. (1991), "Checking the Evidence: The Judge and the Historian," *Critical Inquiry*, Vol. 18, No. 1: 79-92.

Himmelfarb, G. (1987), *The New History and the Old* (Cambridge, MA: Belknap Press of Harvard University Press).

Hindle, B. and Lubar, S. (1986), *Engines of Change: The American Industrial Revolution, 1790-1860* (Washington, DC: Smithsonian Institution Press).

Hoskin, K.W. and Macve, R.H. (1986), "Accounting and the Examination: A Genealogy of Disciplinary Power," *Accounting, Organizations and Society*, Vol. 13, No. 1: 37-73.

Hoskin, K.W. and Macve, R.H. (1988), "The Genesis of Accountability: The West Point Connections," *Accounting, Organizations and Society*, Vol. 11, No. 2: 105-136.

Hoskin, K.W. and Macve, R.H. (1996), "The Lawrence Manufacturing Co.: A Note on Early Cost Accounting in US Textile Mills," *Accounting, Business and Financial History*, Vol. 6, No. 3: 337-361.

Hounshell, D.A. (1984), *From the American System to Mass Production 1800-1932* (Baltimore: Johns Hopkins University Press).

Laurie, B. (1989), *Artisans into Workers: Labor in Nineteenth-Century America* (New York: Noonday Press).

Licht, W. (1995), *Industrializing America* (Baltimore: Johns Hopkins University Press).

Miller, P.B. (1992), "Accounting and Objectivity: The Invention of Calculable Selves and Calculable Spaces," *Annals of Scholarship*, Vol. 9, No. 1/2: 61-86.

Miller, P. and O'Leary, T. (1987), "Accounting and the Construction of the Governable Person," *Accounting, Organizations and Society*, Vol. 12, No. 3: 235-265.

Miller, P. and Napier, C. (1993), "Genealogies of Calculation," *Accounting, Organizations and Society*, Vol. 18, No. 7/8: 631-647.

Nelson, D. (1981), "The American System and the American Worker," in Mayr, O. and Post, R.C. (eds.), *Yankee Enterprise: The Rise of the American System of Manufacturers* (Washington, DC: Smithsonian Institution Press): 171-187.

Nelson, D. (1991), "Scientific Management and the Workplace, 1920-1935," in Jacoby, S.M. (ed.), *Masters to Managers* (New York: Columbia University Press): 74-89.

Prude, J. (1983), *The Coming of Industrial Order* (Cambridge: Cambridge University Press).

Rosenberg, N. (ed.) (1969), *The American System of Manufactures: The Report of the Committee on the Machinery of the United States 1855, and Special Reports of George Wallis and Joseph Whitworth 1854* (Edinburgh: Edinburgh University Press).

Smith, M.R. (1977), *Harpers Ferry Armory and the New Technology* (Ithaca, NY: Cornell University Press).

Tyler, D. (1883), *Daniel Tyler: A Memorial Volume Containing his Autobiography and War Record* (New Haven, CT: published by author).

Tyson, T. (1990), "Accounting for Labor in the Early 19th Century: The US Arms Making Experience," *Accounting Historians Journal*, Vol. 17, No. 1: 47-59.

Tyson, T. (1992), "The Nature and Environment of Cost Management Among Early 19th Century US Textile Manufacturers," *Accounting Historians Journal*, Vol. 19, No. 2: 1-24.

Tyson, T. (1993), "Keeping the Record Straight: Foucauldian Revisionism and Nineteenth Century US Cost Accounting History," *Accounting, Auditing and Accountability Journal*, Vol. 6, No. 2: 4-16.

Tyson, T. (1998), "Mercantilism, Management Accounting, or Managerialism? Cost Accounting in Early Nineteenth-Century US Textile Mills," *Accounting, Business & Financial History*, Vol. 8, No. 2: 211-229.

Walsh, W.B. (1962), *Perspectives and Patterns: Discourses on History* (Syracuse, NY: Syracuse University Press).

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Vol. 27, No. 1
June 2000

ACCOUNTING HALL OF FAME
1999 INDUCTION

August 16, 1999
San Diego, California

Remarks, Citation, and Response

J. MICHAEL COOK

REMARKS
by
Oscar Gellein
Haskins & Sells, retired

I first met Mike Cook a little over 30 years ago (I was older then than he is now) when he was a senior accountant in a Florida office of Haskins & Sells. I recall thinking then that Mike likely would rise to the top leadership position in the firm.

The merger movement of large accounting firms was rumbling and underway when Mike became the managing partner. The eight large firms had their own personalities; some referred to separate cultures. The personalities mirrored the perceptions of strong-minded founding partners. Perceptions about professionalism and marketing of accounting services were divided. (Some believed that the ideal merger would result from the merger of widest differences; others thought that it was one with the narrowest differences. Perhaps time will tell.)

Mike was the right person at the right time to deal with the problems of unification in a merger. As CEO of Deloitte & Touche, he soon made it a bedrock mission of the firm to render

the best possible services to all clients and to establish unity around the world. The office of the chairman was created to monitor effectively engagements with large clients. Programs were adopted to retain and reward talented women. Mike found the formula for the required personality of the newly merged firm.

Had I not known about Mike's talents, his energy, his commitment, and certainly his endurance, when I read the citation prepared by Dan Jensen, I would have thought that it cited the achievements of two or more persons. I now shall read the citation.

CITATION

written by

Daniel L. Jensen
The Ohio State University

This champion of the accounting profession was born in New York City in 1942. He was encouraged and mentored in his study of accounting at the University of Florida by J. T. Ball, then professor of accounting and taxation. Working as a caddy at the Lake Placid Club one summer, he met Hall of Fame member John Queenan, then managing partner of Haskins & Sells and chairman of the AICPA. A conversation with Queenan about the importance of the accounting profession and the role of the AICPA made a lasting impression on the young student.

Upon graduation with honors from the University of Florida in 1964, he joined the Fort Lauderdale office of Haskins & Sells. In 1974, at the age of 31, he became a partner. On assignment to the firm's national office in the 1970s, he worked closely with Hall of Fame member, Oscar Gellein, and Kenneth Stringer, and he remembers the important role they played in his professional development. After leading the firm's Florida practice, in 1983 he was named national managing partner of Deloitte, Haskins & Sells; he became chairman and CEO of the firm in 1986. In 1989, he directed the merger of Deloitte, Haskins & Sells and Touche Ross and was named chairman and chief executive officer of Deloitte & Touche. He also served as chairman of the Deloitte & Touche Foundation and a member of the board of Deloitte Touche Tohmatsu, the global organization with over 82,000 people in more than 130 countries.

During his ten years at the helm of D&T, the U.S. firm more than tripled its annual revenues to over $5 billion and earned national prominence as one of the profession's best

places to work. He received numerous awards for his commitment to the advancement and retention of high-talent women in business, including the CEO Recognition Award from Women in Technology International and *Working Mother* magazine's Family Champion of the Year Award. He was named as the only male member of the President's Commission on the Celebration of Women in American History. Through his leadership, Deloitte & Touche was ranked No. 8 on *Fortune* magazine's 1999 "100 Best Companies to Work for in America," up from No. 14 in 1998—the only professional services firm on the *Fortune* list both years—and one of *Working Mother* magazine's "100 Best Companies for Working Mothers" for five consecutive years. In 1995, Deloitte & Touche was the recipient of the prestigious Catalyst Award.

Known as a strong and effective spokesperson on tough professional issues, he has written and spoken extensively on international accounting standards, the globalization of business, auditor independence, corporate governance, gender equality in the work place, tort and securities law reform. He has often testified before Congress on professional issues. He led the profession's efforts that resulted in the enactment of the Private Securities Litigation Act of 1995 and its counterpart Uniform Standards legislation in 1998. This legislation significantly changed the standards for accounting litigation. He was the youngest chairman of the American Institute of Certified Public Accountants, serving during its high-profile centennial year. He was a member of its Auditing Standards Board and chairman of its SEC Committee and is a lifetime member of its Governing Council. In 1992, he chaired the World Congress of Accountants. He was the longest serving Trustee of the Financial Accounting Foundation (1990-97) and served as chairman and president of the Foundation in 1996 and 1997, a position from which he vigorously defended private-sector standard setting for accounting and financial reporting. He also served on the Advisory Council of the International Accounting Standards Committee, the Executive Committee of the Securities Regulation Institute, the Conference Board, the U.S. Council for International Business, the National Association of Corporate Directors' Blue Ribbon Commission on corporate governance, and as a trustee and international councillor of the Center for Strategic & International Studies. He is a member of the American Accounting Association and has championed his firm's support of accounting education.

His commitment to the profession is equaled by his dedica-

tion to civic organizations and educational institutions. He served as chairman of the Board of Catalyst, the nation's leading organization for the advancement of women in business. He also served as chairman of the Board of Governors of United Way of America, the nation's leader in health and human services. He is a director of the STAR Foundation to Advance the Retarded and Handicapped, a director of the National Forum for Health Care Quality, Measurement and Reporting, and was a member of the New York City Partnership and vice chairman of its Drugs Don't Work Program. In addition, he has been chairman of the board of the United Way of Tri-State and a member of the boards of trustees of the Central Park Conservancy and the New York City Ballet. He has served on the Board of Overseers of the Columbia Business School, the Business Advisory Board of the University of Florida, the Board of Directors of the Associates of Harvard Business School, and the Board of Trustees of the University of Miami. In recognition of his firm's commitment to public service, D&T received United Way of America's prestigious Spirit of America Award.

His many honors and awards include the Columbia School of Business Botwinick Prize in Business Ethics, Yeshiva University's Distinguished Leadership Award, and Monmouth College's Distinguished Business Leader. In 1986, he was named Distinguished Alumnus by his alma mater, the University of Florida, and is a Distinguished Alumnus of its Beta Alpha Psi and Fisher School of Accounting.

He and his wife Mary Anne live in Greenwich, Connecticut, near their daughters, Jennifer and Angela, and son, Jeffrey. He is the 62nd member of the Accounting Hall of Fame, Jay Michael Cook.

RESPONSE

by

J. Michael Cook
Deloitte & Touche, retired

Thank you, Oscar, my mentor, partner, and friend. Your participation this morning with Nettie Belle is a very special part of a very special occasion for Mary Anne and me.

I thank the Board of Nominations for the great honor bestowed on me today. Like many of the previous inductees, I'm not sure I am worthy of this recognition, but I certainly would not miss the opportunity to join such a prestigious and accomplished group. Thanks to Dan Jensen for his assistance and

support and to Tom Burns for all he did to make the Hall of Fame what it is today.

This event and my recent retirement after 35 years at Deloitte & Touche have led me to reflect on my career in this great profession. In doing so, I realize how fortunate I have been and what wonderful opportunities I have had, often for no obvious reason other than being in the right place at the right time.

The first such circumstance led to the most important happening in my life—meeting Mary Anne at the University of Florida. She has been my full partner every step of the way, proving the adage that behind every successful man stands an astonished spouse, who deserves most of the credit for that success; certainly true in my case.

My real interest in accounting began largely by chance. In the summer of 1962, I worked at the Lake Placid Club. One day I was asked to caddy for a particular twosome because one of them, Haskins & Sells partner Fred Halstead, was a member of the same college fraternity displayed on my tee shirt that day. His playing partner was Hall of Fame member John Queenan, managing partner of the firm, who was then the president of the AICPA. John took an interest in this fledgling business student and spent much of the afternoon talking to me about the profession that was so important to him. Back at the University of Florida, my new interest in accounting was further sparked by Professor J.T. Ball, who made an introductory tax class both interesting and challenging at a time when all too often such basic courses sent students to other areas of study. After graduating in 1964, I began my career with Haskins & Sells in its Florida practice.

While it was a wonderful place for a young family to live, Ft. Lauderdale was not the ideal training ground for a developing professional. Once again, good fortune intervened when Julius Phoenix came to South Florida to lead our practice in the late 1960's. Jule had worked with John Queenan on the APB and had led the firm's Research Department which Oscar Gellein had founded in 1953. Seeing some potential in a young manager, Jule collaborated with Oscar and Oscar's successor-to-be, Ken Stringer, and in 1972 sent me off to our national office to work with them. While others may contend for these positions, I have always believed that in Oscar and Ken I learned from the best accountant and the best auditor in our profession. These associations led to many new experiences and opportunities for me, such as in 1975, when Ken went out on a

limb to nominate this new partner for the Auditing Standards Board, and when Hall of Fame member, SEC Chief Accountant Sandy Burton, tapped me to be a member of the first-ever, SEC-appointed, peer-review panel.

One learning experience led to another and after working closely with my predecessors Mike Chetkovich and Charlie Steele, I was chosen in 1986 to lead Deloitte Haskins & Sells and soon thereafter to chair the AICPA in its centennial year, 1986-87. Two years later, I was honored to be chosen to lead the newly formed Deloitte & Touche.

Among the highlights of my years in the profession have been the opportunities to work with Hall of Famers from academia such as Bill Beaver, Norton Bedford, Sid Davidson, Chuck Horngren, Don Kirk, and Bob Sprouse, who honor us by their presence this morning. And it is very special for me to be paired with my colleague and good friend, Ray Groves, in the class of '99. Ray is truly "the consummate professional."

I express a special salute to my partners who are Hall of Fame members, the giants on whose shoulders I stand—the legends, Mr. Sells and Mr. Foye; my friends and teachers, John Queenan and Oscar Gellein; and my partners acquired by the pooling method, George Bailey, Howard Ross, Robert Trueblood, and William Werntz.

Finally, I thank my D&T partners. For over 25 years they have supported and encouraged me in my professional and civic endeavors. There was never a question of benefit to be derived or the amount of time to be spent because my partners have always shared my commitment to fulfill our professional and social responsibilities and to represent our profession in the broader business community. With Mary Anne and my family, each of them shares this honor with me.

I am proud today beyond my ability to express in words. I can only say thank you again with sincere appreciation for this invitation to join the Accounting Hall of Fame. For a professional, there can be no higher honor than this.

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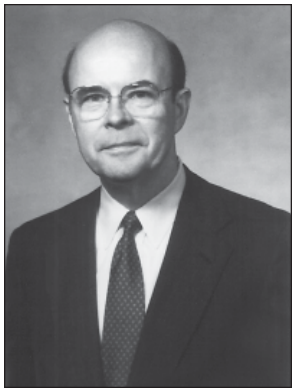

Remarks, Citation, and Response

RAY J. GROVES

REMARKS
by
Dennis R. Beresford
University of Georgia

Four weeks ago today, I received a voice-mail message from Dan Jensen telling me that Ray Groves had been elected to the Accounting Hall of Fame. While that was wonderful news, it got even better for me when Dan went on to say that Ray had asked that I be his presenter. I've had more than my fair share of professional recognition but, clearly, no higher honor than this opportunity to present Ray today.

I've known Ray for almost 28 years. I can actually pinpoint the date as October 1, 1971, when we both reported for service in the national office of Ernst & Ernst. Ray had moved across the hall from the Cleveland-practice office to become senior technical partner of the firm. My own new position was much less exalted, a manager in audit research.

To my great benefit, Ray took me under his wing almost immediately. Thus began probably the most exciting five years of my life, working directly with Ray as he developed a comprehensive national technical function for the firm.

The official citation, which I will read in a few minutes, lists many of Ray's professional accomplishments. They are certainly sufficient to warrant the high honor he receives today. But the official record may not capture personal characteristics of the man. In thinking about how best to do that, I started developing a list of words and terms that help describe him.

One obvious characteristic is his high energy level. I still remember my first out-of-town trip with Ray. We ran three blocks to his parking garage, each of us with a suitcase in one hand and a full briefcase in the other, in order to then speed to the airport and make a flight by about three minutes.

Another characteristic is his superb ability to communicate clearly and succinctly. One assignment we worked on together was to summarize, for the CEO of a major corporation, all of the rules on accounting for business combinations, on a single wallet-sized card!

Still another important reason for his success is his outstanding listening skills. His powers of concentration are amazing. When you are explaining something to him, you almost feel as though he is somehow reaching inside you to pull out the best you have.

When I asked my wife to read these comments, she said that the best way to describe Ray was that he always made you feel that you were important and a friend. Some other words and terms to describe Ray are:

* Smart (extremely so)
* Disciplined
* Demanding
* Creative
* Focused
* Loyal
* A big-picture thinker
* An internationalist

But for those who had the opportunity to work closely with Ray, I think there is one skill above all that distinguishes him. That is his ability to truly empower all of those who worked with him, years before empowerment became a popular management notion. Ray gave us plenty of responsibility and expected us to perform at a higher level than we thought ourselves capable.

Recently I heard that Ernest Hemingway once said, "Sometimes I have good luck and write better than I can." Those of us who have worked closely with Ray recognize that we were indeed lucky as he helped us to perform better than we could.

When Ray retired from Ernst & Young in 1994, I sent him a letter thanking him for his friendship and support for over 20 years. Let me close my comments by reading one paragraph of that letter:

> I recall the many enjoyable partner meetings at the firm. My favorite part always was the dinner when retiring partners reflected on their careers. Those presentations were often very entertaining. But from my perspective as a young partner at the time, the biggest impression was realizing how great an accomplishment it was just to complete a 35-40 year career with one firm. With that perspective in mind, for you to complete such a successful career and to lead the firm for 17 years is almost unbelievable in today's complex world.

You were my mentor and my role model, Ray. Your election to the Accounting Hall of Fame was a slam-dunk, in my view. So let me now read the citation.

CITATION

written by

Daniel L. Jensen
The Ohio State University

This national and internationally respected leader of the accounting profession was born in 1935 in Cleveland, Ohio. He attended Cleveland public schools where he studied French from the second through the tenth grades. He began his career at The Ohio State University in the arts and sciences college but transferred to business in his second year. His interest in accounting was stimulated and encouraged by the excellent teaching and advice of his introductory accounting professor and mentor, James McCoy, who recommended him for a General Electric scholarship and arranged for him to work part-time at a local public accounting firm. He also found time to serve as president of his Beta Alpha Psi chapter and pitcher-manager of his dormitory's baseball team. During his senior year, he obtained an internship with Ernst & Ernst in Cleveland. Upon graduation with honors in 1957, he decided to forego an opportunity to attend law school and joined E&E on a full-time basis. Former E&E chairman and Hall of Fame member Richard Baker recalls, "I did a lot of recruiting for the firm in those days and the only person who had a straight-A record was this young man from Cleveland."

In 1966, at the age of 31, he was promoted to partner, becoming the youngest person in firm history to be admitted to the partnership. In 1968, he was named North Central Regional Director of Accounting and Auditing and, four years later, he became National Director of Accounting and Auditing and SEC Practice and chair of the firm's Technical Committee. During this period of rapid change and development in accounting principles, he spearheaded an extensive and influential series of publications on accounting, auditing, and related topics. During one 12-month period in the early 1970s, his department issued 100 publications. In 1976, he became deputy chairman of E&E and, upon the retirement of Dick Baker the following year, he became chairman and chief executive officer, a position he held from 1977 through 1994.

As chairman and CEO, he set about preparing to meet the challenges of the coming 1980s—an emerging global marketplace, new industry focuses, and increasing competition in financial services. He recalls, "We agreed that there were three things we had to do to meet these challenges—establish a much stronger presence and size capability in New York, create an international firm, and strengthen our marketing efforts." In 1978, E&E merged with the New York firm of S. D. Leidesdorf & Co. and in 1979, with the English firm of Whinney Murray & Co., changing the new partnership's name to Ernst & Whinney. And in 1989, Ernst & Whinney merged with Arthur Young & Co. to form Ernst & Young. During his 17 years at the helm, he led a national firm with particular strength in the midwestern U.S. to become one of the world's dominant professional services firms. He also led his firm out of the difficult and litigious period following the savings and loan industry collapse, while maintaining the firm's commitment to quality, client service, and professional integrity.

His dedication to the betterment of the accounting profession is reflected in his distinguished record of professional service. Following service to the American Institute of Certified Public Accountants as a member of its board of directors and council, chairman of its SEC practice section, and chairman of its Committee on Relations with the SEC, he was named chairman of the Board of the AICPA for its 1984-85 year. As chairman, he was instrumental in the creation and appointment of the Treadway Commission that undertook to improve financial management and deter financial fraud. As chairman, he also expressed his long-held concerns about accounting disclosure overload and advocated the need for financial reporting and

auditing that accommodates changing and diverse needs for financial information. His extensive record of professional service also includes membership on the Board of Trustees of the Financial Accounting Foundation, the Board of Governors of the American Stock Exchange, the Board of Governors of the National Association of Securities Dealers, and numerous committees of the U. S. Securities and Exchange Commission including its Advisory Committee on Corporate Disclosure.

His personal dedication to service on behalf of academe and the community at-large is reflected in his extensive record of volunteer leadership in organizations through membership on their boards and committees. A long-time supporter of higher education, he has served on the advisory councils and boards of many colleges and universities including his alma mater, The Ohio State University, the University of Pennsylvania's Wharton School and Center for Study of the Service Sector, the University of Chicago's Graduate School of Business, and Ursuline College. He currently serves as vice-chair of the Board of Directors of The Ohio State University Foundation. His many public service activities include councilman for the City of Lyndhurst, Ohio; chairman of the Board of Trustees of Leadership Cleveland; chairman of the Fishman-Davidson Centre for Study of the Service Sector; and membership on the boards of the Business Council of New York State, the Business Council for the United Nations, the New York State Public Policy Institute, and the Council on Foreign Affairs. He also serves as a managing director, executive committee member, and secretary-treasurer of the Metropolitan Opera Association.

His many honors and awards include the Gold Medal of the American Institute of Certified Public Accountants and countless awards from the colleges, universities, and professional and service organizations to which he has given so generously of his time and energy over the years.

Currently, he is chairman of Legg Mason Merchant Banking, Inc., a private equity fund, and serves on seven New York Stock Exchange company boards of directors. In addition to a deep interest in the opera, he enjoys hunting, golf, reading, and supporting his wife's interest in American and European antiques. He lives with his wife, Anne, in New York City and Connecticut; they have three sons, David, Philip, and Matthew. He is the 63rd member of the Accounting Hall of Fame, Ray John Groves.

RESPONSE

by

Ray J. Groves
Ernst & Young, retired,
and Legg Mason Merchant Banking, Inc.

In accepting this honor, I wish first to thank Denny Beresford for his very generous comments. It has been a personal as well as a professional pleasure to have been associated with Denny for more than 25 years. I also wish to thank Professor Dan Jensen for his tireless commitment to maintaining the historical purpose and importance of the Accounting Hall of Fame.

There are so many people who have contributed to my education and career—academics, professional colleagues in my firm and in the profession, government officials, corporate officers, AICPA staff, and certainly my wonderful family. I wish to thank them all very much for their support over many years.

With your permission, I would like to devote the remainder of my comments to some thoughts on accounting education. In my opinion, accounting education is the foundation of all achievements in accounting—past, present, and especially the future. Ten years ago, the then "Big Eight" firms issued a White Paper on accounting education (which, Mike Cook, my fellow honoree today and I both signed). The White Paper led to the creation of the Accounting Education Change Commission and included a significant financial commitment to support the development of stimulating and relevant curricula. The foreword to the White Paper started with the following two sentences:

> We have developed this paper because of our concerns regarding the quality and number of accounting graduates available to the public accounting profession. At the same time, questions are being raised by the academic community regarding the effectiveness of accounting education.

In the decade since the White Paper was issued, much progress has been made in teaching an integrated way of thinking about business. I congratulate all who have contributed to this meaningful progress.

However, the greatest challenge for accounting education continues to be the pace of change. Whether it is e-commerce or distance learning, change is occurring at an incredible rate. Future graduates may be performing work that has not yet even been identified. The *Journal of Accountancy* characterized the

environment well in a recent issue (May 1999, p. 4):

> The education a CPA got in the 1980s is a fraction of what he or she needs to know today. CPAs in industry have burst out of a once narrowly defined area and become corporate strategic planners and decision makers. CPAs everywhere are doing more for their clients and their employers because the marketplace demands more.

So I am using this forum and this opportunity to encourage strongly the public accounting firms, together with the corporate and financial communities, to renew and expand their commitment to accounting education. These professional and business communities must work even closer together today than they have in the past. They need to forge effective partnerships with accounting educators to continue to enhance accounting education and to capitalize on the opportunities presented by the expanding domain of accounting and the rapidly developing information and communication technologies. This commitment is necessary if the future graduates are to be prepared and qualified to be the future business leaders of our society.

The increased commitment that I urge the business community to embrace must include not only more financial resources, but also a much more generous sharing of the time of the most talented people within firms and companies. Faculty development is of greater importance today and in the future because the technology of accounting practice is changing so fast that it is very difficult to codify it for inclusion in curriculum. It's a race to get this technology to the campus before the technology becomes obsolete.

The marketplace does indeed work—not always in the chronology that we wish—but it works. The marketplace is again calling for the partnership of education and business to move to a higher level of support post-2000. I urge the leaders in education and business to exercise their leadership in responding to this challenge.

AHJ AD HOC REVIEWERS

The editor would like to acknowledge the contribution of the following ad hoc reviewers pressed into service as occasioned when the expertise of the editorial board was challenged or when the time commitment of its members was overextended.

Robert Bloom, John Carroll University

William Cenker, John Carroll University

Dale Flesher, University of Mississippi

Keith McMillan, Rockhurst College

Dean Neu, University of Calgary

David Oldroyd, University of Newcastle

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