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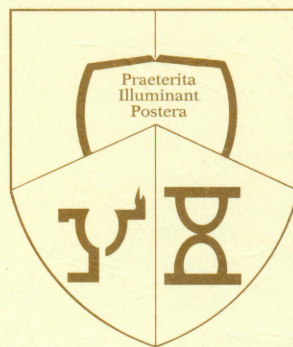
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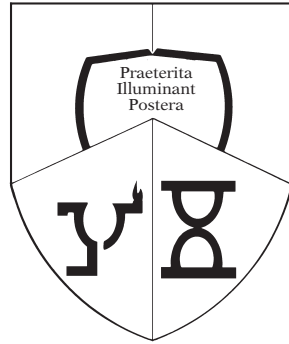
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Research on the Evolution of Accounting  
Thought and Accounting Practice



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## 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.

1. Authors should provide a clear specification of the research issue or problem addressed and the motivation for the study.
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5. In performing all analyses, authors should be sensitive to and take adequate account of the social, political, and economic contexts of the time period examined and of other environmental factors.
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## ACCOUNTING HISTORIANS JOURNAL

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1. An abstract of approximately 100 words on a page that includes the article's title but no identification of the author(s) .
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3. A limited number of tables, figures, etc., appended at the conclusion of the text, but whose positioning in the narrative is indicated.
4. References are to appear in brackets within the text. Specific page numbers are mandatory for all direct quotes but are optional otherwise.
5. 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. If time permits, authors will be sent galley proofs. However, the inclusion of additional material will be severely limited.

Authors will be provided with 3 copies of the *AHJ* issue in which the manuscript is published. Reprints may be ordered by arrangement with the publisher.





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## AN ANALYSIS OF PUBLISHING PATTERNS IN ACCOUNTING HISTORY RESEARCH IN ITALY, 1990-2004

*Abstract:* In the last decade, an increasing number of analyses of accounting history literature have been undertaken to classify historical research paths and to “map” the variety of approaches and issues of the discipline in different geographical settings so as to make international comparisons. The paper develops these topics in the Italian context by studying the development of accounting history research (AHR) in the last 15 years. Contributions by Italian authors have been published in international and national specialist journals as well as in more general accounting journals. Other papers have been presented and published in the proceedings of the biannual SISR (*Società Italiana di Storia della Ragioneria*) Congress and in the Congress celebrating the 500th anniversary of the publication of Pacioli's *Summa* held in Venice in 1994. The findings chart publication trends during the period 1990-2004 from a quantitative and qualitative perspective, based on different dimensions, the dynamic of change in Italian AHR, and its possible limitations. The paper is informed by an international perspective and causal interpretations are attempted.

### INTRODUCTION

Since the 1990s, many scholars of accounting history have extended the research work, the cultural and philosophical frameworks, and the parameters of publication in many different respects (journals, authorship, etc.). A reflection on the way such research work is developing is useful not only to rearrange

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the fruits of the increasing production on the subject according to historiographic genres but for other purposes which share the same sensitivity regarding trends and opportunities for fruitful developments in the area of historical business studies [Walker, 2005].

Some years ago, this focus began to appear in international journals of accounting history, with reference to the trends and character of publications collected over time, for spatial and temporal comparisons. Consistent with such research works, this paper will go into the details of some features of the Italian accounting history studies carried out in the last 15 years, based on a significant although incomplete database of publications. Similarly to what has already been done internationally, the goal is to provide a reference framework from a time-related perspective and to make a few comments on some significant aspects brought to light by the survey, such as the subject, the time-related focuses, and the methods for the conduct of such research investigations.

The first section of the paper is a study of the main international research that has been conducted and the results of these studies. It presents the research model used for studying Italian publications and the boundaries of such study – the spatial boundaries (the reviewed papers of research into accounting history), the time boundaries (the reviewed time span), and the selected dimension of the study. This will be followed by a description of the main subjects that have been addressed by each category. Subsequently, the main results will be shown with a final discussion of their possible interpretations.

#### RESEARCH “INTO” ACCOUNTING HISTORY SINCE THE '90S: AN INTERNATIONAL PERSPECTIVE

A recent article by Fleischman and Radcliffe (F&R) [2005] outlining the developments of accounting history literature during the '90s identified this decade in accounting history as “the roaring '90s” for the growth of new research opportunities that emerged at the end of the last century. The production of papers in accounting history research (AHR) has not just increased in quantity but also, and above all, in quality. Some research works have highlighted the process of change and differentiation of the historiographic approach (“traditional” vs. “critical”) and research paradigms (“Neoclassical,” “Foucauldian,” and “Marxist”) within which the Anglo-Saxon production of accounting history has found some place since the '90s, thereby opening

new space for the interpretation of the role of such studies and the possible scope of their developments [Parker, 1997; F&R, 2005]. The spread of the perspective of a “new” accounting history, breaking from the traditional evolutionary approach which reads the past in light of the present, looks for deep interactions with space and time in which accounting develops, and, above all, recognizes the ability of accounting to transform social relations [Miller et al., 1991; Miller and Napier, 1993].

Interest in historiographic studies about the features of accounting history publications is therefore associated with the powerful development that the field has undergone since the '90s. The historiographic studies that have addressed such subjects on an international scale have found many explanations and analytical approaches. With a view to an international comparison, Carnegie and Potter [2000] have shown the features of the main specialist journals (*Accounting, Business & Financial History*; the *Accounting Historians Journal*; *Accounting History*) for the period 1996-1999, using a classification of subjects and approaches previously identified in a paper by Carnegie and Napier [1996]. Seven major areas into which AHR could be classified were discussed: historical studies of companies, based on documents that have survived; use of accounting records in business history research works; biographies of reputable experts; prosopographies (the study of features shared by groups of historical players that may help shed light on their value systems; e.g., social and family backgrounds, careers, religious and political affiliations); the history of institutions related to the accounting profession; public accounting; and international comparative accounting history, aimed at highlighting the cultural diversity of the reviewed settings. The picture offered by Carnegie and Potter's study substantiates the prevalence of Anglo-Saxon papers and shows a local concentration of publications in the sense of a close correlation between the nationality of the authors and that of the journal. In addition, a close connection seems to exist between authors' geographical origins and their subjects of study, while the most frequently studied historical ages were the 19th and 20th centuries.<sup>1</sup>

The existence of “dominant” trends and, accordingly, the developmental potentials for historical studies in areas under-investigated to date are more clearly documented in other studies.

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<sup>1</sup>This research has also been extended to a gender analysis by examining the participation of women in the development of the specialist, international, accounting history literature [see Carnegie et al., 2003].

Some papers [Carmona et al., 1999; Carmona, 2004] showed how the prevalence of research works from the Anglo-Saxon world finds an essential determinant in the language barrier. Anglo-Saxon researchers benefit from the substantial advantage of being able to write in the language universally accepted as the medium for the dissemination of research in business and accounting.<sup>2</sup> As to accounting history, Carmona [2004] did empirical research on papers presented at international conferences or published in journals in the '90s. He found that 91% of these were by Anglo-Saxon authors (only 3% were French, 2% Spanish, 1% Italian), that these papers focused on Anglo-American research subjects and areas, and that 72% concerned the period 1850-1945, an age that witnessed the development of Western capitalism. The extension of Carmona's survey to papers and publications in Spain, Portugal, and Italy showed instead that in the '90s, the variety of studies was far richer in terms of subjects, objects, and reference periods than English-speaking international meetings and journals.

With respect to the problem of the "dominance of the Anglo-Saxon mainstream," other research works have focused on the "variety" of research works and approaches [Carmona and Zan, 2002]. There is a need for a pluralist approach that may enrich the contribution made by accounting history to knowledge on a spatial scale. One way forward would be studies of "unusual" contexts (e.g., churches and non-profit agencies), as well as time periods more focused on the pre-industrial age. The significance of such research is corroborated by the fact that some of them have supplied elements for the "forging" of important assumptions such as, for instance, the origin of cost accounting, which in *mainstream* AHR has been closely connected with industrial development and its competitive scenarios whose existence and significance have been proven in early industrial and monopolistic settings [e.g., Carmona et al., 1997; Hoskin and Zan, 1997].

The acknowledgment of and the increasing interest in a wider range of geographical origins has been enhanced by the recent publication of special issues of international journals on specific countries<sup>3</sup> and the greater frequency of historiographic papers focused on the development of accounting history in specific countries [e.g., Hernández Esteve, 1995, on Spain].

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<sup>2</sup>For additional comments on this topic, see Parker [1993].

<sup>3</sup>for instance, special issues of *Accounting, Business & Financial History* on the U.S. (Vol. 10, No. 2, 2000), Japan (Vol. 11, No. 3, 2001), and Spain (Vol. 12, No. 2, 2002)

As to the approach suggested, for example, research “into” historical studies on business subjects, the Italian scenario has not been extensively studied, unlike other international situations. In this respect, one of the most outstanding studies on accounting history in Italy is one by Zan [1994], that acknowledges an increasing interest in the variety of national traditions in business studies. It gives an insightful picture of the development of accounting history and historiography in Italy up to the '90s. In view of the considerations we will address in the paper, some of the conclusions of this article provide opportunities for making comparisons. We are talking in particular of the lack of attention paid by Italian accounting scholars to the historical study of accounting practices and the use of archival documents from the 16th century onwards, unlike what can be found in accounting history studies focused on earlier centuries. In this respect, Zan [1994, pp. 258, 294] found that Italian scholars mostly tended, as to the latest centuries, to conduct rather a “history of accounting thought,” mostly based on the study of works by different scholars. A large part of the investigation of Italian AHR has been attracted to Zappa’s theory and the extent of his contribution.<sup>4</sup> Important historiographers of Italian accounting addressed the topic of the Zappian “accounting revolution” [Galassi, 2002; Canziani, 1994a; Ferraris Franceschi, 1994; Zan, 1994], the thought of the founder of Italian *economia aziendale* (business economics),<sup>5</sup> attempting to assess his contribution

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<sup>4</sup>Zappa was an innovator of accounting content and stressed quantitative determinations as the focus of this discipline. However, these could not live separately from business organization and management; otherwise the outcome would have been pure formalism. Zappa [1927, p. 20] believed that organization and management disciplines should be joined to accounting. *Economia aziendale* is, therefore, an overall doctrine that regards business as a complex whole. Its main features can be summarized by these general points:

- *Economia aziendale* covers all forms of economic organization at all levels: the household, business firms, public enterprises, towns, up to the state. The word “*azienda*” is a generic term, often translated as “concern.”
- It aims at developing the general principles that govern the equilibrium of the *azienda* as a coherent unity; Zappa’s contribution is characterized by a “radical holistic approach” based on a “unitary view of the *azienda*” [Zan, 1994].

<sup>5</sup>The translation of the term “*economia aziendale*” is a questionable issue. “In a non-literal translation, it stands for something like the ‘economics of economic units’ or the ‘science of economic administration’” [Zan, 1994, p. 289]. Others have translated it as “concern economics.” In fact, “A concern is an economic entity and the term covers all kinds of economic units such as business firms, government agencies, private households, etc. The term concern is used because it is general and applicable to the economic aspect of any social institute (typical

to the development of Italian accounting and business thought.

In this perspective, the article by Zan is wide and far-ranging and offers many cues for a critical analysis of Italian accounting history, in particular the “purpose” that studies on the evolution of the doctrine seem to have if compared with Zappa’s [1927, p. 294] business economics perspective, “...a linear and cumulative view of the ‘progress’ of accounting knowledge over time, of a very positivist vein” and poor propensity to set the developments of the 20th century business management philosophy in the context of a wider international scenario.<sup>6</sup>

The findings of this research offer insights to understanding the evolution of AHR in Italy in the last 15 years. Changing events are significantly marked by the propelling activity of an important Italian institution, the “*Società Italiana di Storia della Ragioneria*”<sup>7</sup> (SISR), which has impacted AHR in Italy. The reasons are linked to the aims of this association and its influence. In fact, the SISR was born under the aegis of the *Comité International des Historiens de la Comptabilité* (Belgium), the *Institut Français des Historiens Comptables* (France), the Accounting History Society (U.K.), the Academy of Accounting Historians (U.S.), and the Accounting History Association (Japan) to “promote” accounting history research. Its statement of mission pinpoints that the association promotes “studies and research works related to Accounting History, to work in the search, preservation, publication and illustration of the relevant historical materials, to spread the knowledge of Accounting History, to organise meetings and conferences.”<sup>8</sup>

The SISR has influenced the development of accounting history research through its biannual congresses and its sponsorship of several national and international accounting history conferences and workshops, fostering AHR within the broader Italian accounting research agenda.

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institutes are a family, a firm or enterprise, a territorial public institute, a cultural institute and so on). The word firm (or enterprise or business) designates only the institute whose economic aspect is the production concern” [Galassi, 2002, fn. 9]. For consistency, “business economics” has been chosen in the text.

<sup>6</sup>However, the purpose of this research, due to the stage of development in which it is set and the limits that will be stated, does not provide for a deeper analysis and comparison regarding such interpretation.

<sup>7</sup>Italian Society of Accounting History. The SISR is based in Pisa, where it was established in August 1984 on the occasion of the IV World Congress of Accounting Historians.

<sup>8</sup>See the website for the full version of the statement of the mission at <http://www.sisronline.it/>.

## THE STUDY OF AHR IN ITALY: THE ADOPTED APPROACH

In the light of these considerations, it is interesting to examine the production of accounting history in Italy, which has a specific tradition in the development of accountancy and historical accounting studies, in an attempt to find elements of “discontinuity” and “differentiation” with similar international experiences. The adopted approach of analysis helps us to understand the changes that occurred in the last decade and possible trends for the future. Thus, our research will parallel international studies in examining the spread and development of AHR at an international level. Suitable criteria will enable us to engage in research comparable to that conducted by scholars of other countries.<sup>9</sup> However, Carnegie and Potter’s [2000] and Carmona’s [2004] studies are those that have most inspired this paper although we have altered the framework to highlight distinctive features of Italian contributions.

The main criteria adopted are: (1) a set of criteria providing the definition and the collection of the sample for the study; i.e., the ways in which publications have been collected and the database organized and (2) a set of criteria leading to database interpretations and to the definition of the “dimension” or “prospects” of the study.

A first set of criteria includes the following parameters:

1. the time period over which accounting history articles were collected
2. the specific journals which constitute the database of articles
3. the geographic areas considered for study
4. the dimensions of authorship – affiliations, institutions, and/or countries
5. the research methodologies chosen for selecting and classifying publications

A second set of criteria applied to articles includes the following parameters:

1. the subject of research, with special reference to (a) the context that is the subject of the historical study, and (b) the accounting sub-discipline that constitutes the focus of the article
2. the historical period in which the subject of the publication is placed

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<sup>9</sup>for instance, Zan [1994]; Carnegie and Potter [2000]; Boyns and Carmona [2002]; Carmona and Zan [2002]; Carmona [2004]; Silva de Serra Faria [2005]; Walker [2005]

3. the prevailing evidences and sources of knowledge upon which the research is based

### THE SELECTION OF PUBLICATIONS

*The Time Period:* The need to conduct historiographic studies on accounting history publications has come more powerfully to the fore in the '90s as a response to an increase in subject matters and new opportunities for exchanges of experiences across Europe. This was a component of the "roaring '90s" that F&R [2005] identified.

Traditionally there are several reasons for the increased interest in accounting history studies [Carnegie and Napier, 1996]. These include the need to supply professionals with a "status" which is rooted in the past and is related to the development of civilization; the enhancement of our understanding of the present and perhaps the future; and the opportunity to utilize different domains (sociology, psychology, philosophy) for highlighting the nature of accounting as a cultural and not just a technical phenomenon.

AHR has also become more and more prominent in Italy. This study is focused on a time span from 1990 to 2004. Although it seems to be a comparatively short period, it includes important new initiatives, such as the biannual SISR congresses, and the efforts of important academic playmakers, such as the Universities of Venice, Siena, Pisa, and Florence, to propel AHR into the national scholarly network. The growing production of AHR in Italy features an interest in analyzing changes and understanding phenomenon, comparing local trends with evidence of similar events abroad.

The limits of such an approach lie above all in the time span considered and the extension of the sources used; however, in our opinion, it is effective to exam the research and publishing patterns developed by Italian authors in this critical period of change. In our research, the work is methodologically facilitated because the time span selected covers periods that have been more frequently studied in an international context.<sup>10</sup> We

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<sup>10</sup>Studies aimed at examining a time span like ours are developing in other European countries. In particular, Carnegie and Potter [2000] have focused their paper on the period 1996-1999; Boyns and Carmona [2002] have looked at works from 1996-2001; Carmona and Zan [2002] specifically examined a selection of historical articles published in a special section of the *European Accounting Review* in 2002. Subsequently, Carmona [2004] examined works from the decade 1990-1999, Walker [2005], in the attempt to extend the examination of informa-



witness the process of the internationalization of AHR where a key role has been played by the international specialist journals published in English. The decision, therefore, is to enrich and supplement the research results gleaned by Italian academia and, thus, to examine its role in the internationalization of Italian AHR.

*Sources, Settings, and Authorship:* The sources, the geographical area of reference, and the authors' affiliation are the basic criteria for the collection of a more consistent and significant database for interpreting research developments in Italy.<sup>11</sup> This interest is further strengthened by our will to measure, after ten years, the level and methods of dissemination, both nationally and internationally, of the papers on accounting history produced by Italians [Zan, 1994]. Other scholars [Carnegie and Potter, 2000, pp. 181-182] have only examined a specific selection of journals, studying how the publications could be categorized by authorship. For this reason, they classified articles only by the national location of the institutions where the authors were working at the time of publication. Here, by contrast, a database of 258 publications from 1990-2004, with only authors of Italian nationality and subjects associated only with Italy, have been collected from the following sources (Tables 1 and 2):

- 1) ISJ: international specialist history journals: *Accounting, Business & Financial History (ABFH)*; *Accounting Historians Journal (AHJ)*; *Accounting History (AH)*
- 2) IGAJ: international general accounting journals: *Abacus (A)*; *Accounting, Auditing & Accountability Journal (AAAJ)*; *Accounting and Business Research (ABR)*; *Accounting, Organizations and Society (AOS)*; *The Accounting Review (TAR)*; *Contemporary Accounting Research (CAR)*; *Critical Perspectives on Accounting (CPA)*; *European Accounting Review (ERA)*; *Journal of Management*

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tion to a broader time span to test assumptions made in previous papers, selected writings published between 1954 and 2002. Finally, the paper of Silva de Serra Faria, presented at the Braga, Portugal conference in 2005, went into detail about AHR in Portugal.

<sup>11</sup>The study considers only the publications that centered on Italy as the geographical area of reference and were presented by Italian authors. The cognitive objectives of this study led us to add to the database Italian authors working in both Italian and foreign universities. Such a decision is essential in order to have a better understanding of the way scholars whose training and experience have taken place mostly in Italy have helped spread the knowledge of Italian accounting history.

*Accounting Research (JMAR); Management Accounting Research (MAR)*

- 3) NSJ: national specialist history journals (both in business and accounting): *Contabilità e Cultura Aziendale; Imprese e Storia; Annali di storia dell'impresa*
- 4) NGAJ: national general accounting journals, including accounting history studies (published in Italian): *Amministrazione e Finanza; Budget; Economia & Management; Il pensiero economico italiano; Rivista dei Dottori Commercialisti; RIREA – Rivista Italiana di Ragioneria e di Economia Aziendale; Economia Aziendale* (a business administration journal, published in English)
- 5) PPC: published proceedings of accounting history conferences: the biennial meetings organized by the *SISR* and the international conference for the celebration of Frà Luca Pacioli held in Venice in 1994

Tables 1 and 2 reflect the infrequency with which Italian authors have appeared in international outlets, four each in general and history-specific journals.

**TABLE 1**  
**Analysis of Articles by Source**

Source	No.	%
ISJ	4	1.6%
IGAJ	4	1.6%
NSJ	27	10.5%
NGAJ	81	31.3%
PPC	142	55.0%
Total	258	100.0%

**TABLE 2**  
**Articles Classified by Journals**

Source	Journal	Years in the sample	No.	%
ISJ (tot. 4)	<i>ABFH</i>	1990-2004	2	0.8%
	<i>AHJ</i>	1990-2004	1	0.4%
	<i>AH</i>	1996-2004	1	0.4%

IGAJ (tot. 4)	A	1990-2004	0	0.0%
	AAAJ	1990-2004	0	0.0%
	ABR	1990-2004	1	0.4%
	AOS	1990-2004	1	0.4%
	TAR	1990-2004	0	0.0%
	CAR	1990-2004	0	0.0%
	CPA	1990-2004	0	0.0%
	EAR	1993-2004	2	0.8%
	JMAR	1990-2004	0	0.0%
	MAR	1990-2004	0	0.0%
NSJ (tot. 27)	<i>Contabilità e Cultura Aziendale</i>	2001-2004	22	8.5%
	<i>Annali di storia dell'impresa</i>	1990-1993 1999-2004	2	0.8%
	<i>Imprese e Storia</i>	1990-2004	3	1.2%
NGAJ (tot. 81)	<i>Amministrazione e Finanza</i>	1990-2004	0	0.0%
	<i>Budget</i>	1990-2004	0	0.0%
	<i>Economia &amp; Management</i>	1990-2004	0	0.0%
	<i>Economia Aziendale</i> (in English)	1990-1995	5	1.9%
	<i>Il pensiero economico italiano</i>	1990-2004	1	0.4%
	RIREA	1990-2004	70	27.1%
PPC (tot. 142)	biannual SISR conference	odd years 1991-2003	122	47.3%
	international conference to celebrate Frà Luca Pacioli	1995	20	7.7%
	Total		258	100%

The results in Table 2 are influenced by the decision to exclude both unpublished monographs and paper presentations. The choice was dictated by the desire to have a database easily comparable to existing international ones. However, as to the criteria used in similar empirical works on accounting history publication, we observe different behaviors. Some authors have limited their scope to blind-refereed journals [Carnegie and Potter, 2000; Carmona and Zan, 2002], while others have extended their coverage to include papers presented at international meetings and postgraduate theses [Carmona, 2004]. Table 3 summarizes the criteria used in papers considered most significant for comparison.

**TABLE 3**  
**Different Methods Adopted to Create a Sample for  
 Analyzing the Spread of AHR**

Authors	Number of Articles	Journal Sources	Referee Intervention	Secondary Sources
Carnegie and Potter [2000]	149	ISJ	yes	research results, notes, and comments
Carmona [2004]	410	ISJ IGAJ	yes and no	international and national meetings, other sources
Carmona and Zan [2002]	8	IGAJ	yes	
Boyns and Carmona [2002]	145	ISJ IGAJ NSJ NGAJ	yes and no	research results, book sections, postgraduate theses, papers
Walker [2005]	521			from the "Historical Abstracts" database

The aforementioned criteria not only allowed us to limit the relevant publications, but it also made it possible to conduct a more detailed classification of the collected works by studying abstracts and the texts themselves when there were either no abstracts or when the abstracts did not give sufficient indications of the parameters of the historical work. This method was chosen by the other authors. In addition, the research benefited significantly with access to university libraries and web sites, making it easier to collect the materials, especially international ones.

Finally, the choice of the database raises a further consideration. Conference papers are more likely not subject to refereeing in the usual rigorous way or, alternatively, if reviewed, are evaluated at a lower standard than applied for other classes of publication. For this reason, Tables 4, 6, 7, and 8 distinguish journal publications from the complete database, allowing a comparison of the results with similar research mentioned before.

### ANALYSIS OF PUBLICATIONS

*The Dimensions of the Analysis: The Chosen Patterns of AHR in Italy:* The variety of subjects, in-depth topics, analytical methods, and adopted theories are very wide, determining a significant complexity of analysis, even if, on the other hand, multicul-

tural and multidisciplinary productions enrich this pathway of studies [Carmona and Zan, 2002, p. 302]. As mentioned before, some authors have tried to find a pattern to accounting history papers, according to subject matter and/or methodology [Carnegie and Napier, 1996, pp. 17, ff.], and, based on these classifications, attempted to organize their analyses [Carnegie and Potter, 2000, pp. 183-193]. Inspired by such works, but keeping in mind the classifications used also in recent special issues/sections of international journals [Boyns and Carmona, 2002, pp. 151-153; Carmona and Zan, 2002, pp. 295-299], we have tried to organize the contents of Italian works in different analytical perspectives. The first one pertains to *the context* of the phenomenon under investigation; the second one relates to *the focus*, the specific accounting sub-discipline the context highlights; the third is the *historical period* observed; and the fourth analyzes the prevailing research evidences and their use in carrying out the historical research.

Our first aim was to classify the contexts as follows:

- frameworks; i.e., interpretive general patterns related to the historical development of “business management” and accounting history and to principles and methods for AHR
- accounting thinkers, as concerns “life and works” of the authors, pinpointing the analysis of the character of the scholars’ productions during the historical development of the subject matter
- accounting profession, concerning the development of the accounting profession in Italy and other related topics
- history of the Italian accounting discipline; i.e., detailed information on the development of economic and business philosophy in Italy, in connection with specific historical periods and subjects (accounting tools, principles, concepts)
- accounting practices in organizational context/site, related to the description of relevant historical accounting issues, based on the study of past accounting experiences
- other topics involving various contents

The accounting practices group includes more sub-categories due to the different characteristics of the organizations examined which seemed to be of international interest [Walker, 2005], such as:

- accounting practices in the public sector
- accounting practices in enterprises

- accounting practices in charities and non-profit organizations
- accounting practices in churches and monasteries

Details of these classifications are listed in Tables 4 and 5, while a qualitative summary analysis of the main contents of researches in each area will be provided subsequently.

**TABLE 4**  
**Classification of Publications by Context**

Category	Total		Journal Publications	
	No.	%	No.	%
frameworks	19	7.4%	10	8.6%
accounting thinkers	85	32.9%	48	41.4%
accounting profession	16	6.2%	5	4.3%
history of accounting discipline	53	20.5%	32	27.6%
accounting practices	72	27.9%	20	17.2%
other	13	5.0%	1	0.9%
Total	258	100.0%	116	100.0%

**TABLE 5**  
**Sub-Classification of Accounting Practices Category**

Sub-Category within Accounting Practices	Total		Journal Publications	
	No.	%	No.	%
public sector	23	31.9%	5	25.0 %
enterprises	30	41.7%	8	40.0 %
charities and non-profit organizations	4	5.6%	1	5.0 %
churches and monasteries	15	20.8%	6	30.0 %
Total	72	100.0%	20	100.0 %

A significant concentration of publications can be noted for the “accounting thinkers” (32.9%), a phenomenon that appears to be even more pronounced than found by Carnegie and Potter [2000] and by Walker [2005]. In particular, 12 of the 85 publications on accounting thinkers (4.6% of the total) related to the Pacioli conference of 1994. This category appears even more remarkable if we consider only the journal publications (41.4%). The prevalence of this kind of AHR and its relative weight is higher in Italy than abroad, highlighting the prevalence of more traditional approaches that tend to focus on key individuals and

their influence on accounting concepts, practices, and institutions. This is cause and effect at the same time of a relatively low exposure of domestic AHR to the international context where a greater variety of approaches and epistemological perspectives are brought to bear [Previts et al., 1990a, b]. It is noteworthy, however, that this research genre does not constitute the majority in the period considered. Rather, a broader variety has emerged.

As to the possibility of referring back to specific sub-disciplines of accounting, the analysis in accounting history publications is complex, so the focus of the research was only on the distinction between publications that concern accounting records and balance sheets, to which we added studies on the evolution of the double-entry method, and the ones concerning historiographic subjects in the area of management control and cost accounting. The remaining subjects have been grouped into a third category which includes more far-ranging subjects, such as studies on the evolution of business management, and subjects not easily referred to any other category or which require further investigation. The intention was to express just a few easily identified subject categories that could answer some questions raised by authors in the past [Zan, 1994] about the main directions of study adopted in Italy.

**TABLE 6**  
**Classification of Publications by Main**  
**Sub-Disciplines of Accounting**

Type of Sub-Discipline	Total		Journal Publications	
	No.	%	No.	%
financial accounting	133	51.6%	58	50.0%
cost and management accounting	21	8.1%	12	10.3%
other (not specified)	104	40.3%	46	39.7%
<b>Total</b>	<b>258</b>	<b>100.0%</b>	<b>116</b>	<b>100.0%</b>

In this case, Table 6 shows the clear prevalence of studies related to accounting and corporate balance sheets (133, 51.6%), compared to works that investigate cost accounting and management accounting subjects (21, 8.1%). No substantial difference emerges from Table 6 when journal publications are considered. The prevalence of AHR oriented towards financial accounting reflects the tradition of Italian accounting studies. Management and cost accounting techniques in industrial settings developed later in Italy than in Anglo-Saxon countries.

Prior research on this issue has found reasons for this, including protectionist economic policy and late industrial development in Italy; the family-run and monopolizing nature of corporate governance; and the mistrust of the prevailing Italian business discipline in analytical and sectional determinations [Zan, 1994; Bergamin Barbato et al., 1996; Antonelli et al., 2002; Cinquini and Marelli, 2002].

Regarding the identification of the historical period within which the subject of the study is placed, we identified the reference century. When coverage spanned more than one century, we applied a fraction of a century (e.g., if a work spanned five centuries, .2 was applied to each century).

Table 7 suggests that Italian authors produced studies fairly consistently for the 16th through the 18th centuries even if our sample includes, quite reasonably, a higher number of studies from the 19th (19.6%) and 20th centuries (40.0%). Nevertheless, unlike the findings of Carnegie and Potter [2000], Italian production before the 16th century is also significant. This peculiarity can be explained as Italy was the country in which “double-entry bookkeeping” was originally developed and by the importance in Italian history of the period, starting with the 13th century, with the rebirth of trade and the growing political and economic power of the Church and leading Italian city-states (Venice, Pisa, Florence, Siena, etc.). Furthermore, the cultural and political aspects of the Italian Renaissance mandated the development of accounting to support administrative practices. Of such experiences, Italy has bounteous archival evidence, which is increasingly attracting Italian accounting historians. An analysis of journal publications underlines a higher concentration in the 20th century (54.9 %) but a lower one in previous centuries.

Actually, even if the papers considered are mostly focused on 19th and 20th century subjects (59.6%), about 17% of the research works involve topics from the 14th, 15th, and 16th centuries. These figures are consistent with international AHR, but there is a significant difference in the proportions, as explained below. In fact the paper by Carnegie and Potter [2000] and other papers mentioned above indicate that, in the three specialist international accounting history journals, 73% of total 1996-1999 publications address subjects of the past two centuries, while only 9% deal with 14th, 15th, and 16th century events.

Finally, an analysis of prevailing research evidence allows us to classify the papers according to the following principles:

- “archival (primary) sources,” when the paper shows results that come from business archives



**TABLE 7**  
**Classification of Publications by Period**

Century	Total		Journal Publications	
	No.	%	No.	%
pre-12th	4.08	1.6%	1.09	0.9%
12th	1.50	0.6%	0.11	0.1%
13th	0.92	0.4%	0.53	0.5%
14th	8.39	3.3%	4.03	3.5%
15th	19.59	7.6%	6.23	5.4%
16th	15.69	6.1%	6.43	5.5%
17th	12.61	4.9%	3.93	3.4%
18th	20.30	7.9%	3.59	3.1%
19th	50.58	19.6%	17.43	15.0%
20th	103.32	40.0%	63.66	54.9%
other	21.0	8.1%	9.00	7.8%
Total	258.00	100.0%	116.00	100.0%

- “published sources,” when the paper is mainly based on the author’s own works or secondary sources on the topic
- “other,” when the research is based on both or neither of the aforementioned types of sources (e.g., Cinquini, 2004 is based on both an archival source on corporative economy and an analysis of published works to highlight its influence over Italian scholars in the 1930s.)

**TABLE 8**  
**Classification of Publications by**  
**Prevailing Research Evidence**

Prevailing Research Evidence	Total		Journal Publications	
	No.	%	No.	%
archival (primary) sources	73	28.3%	23	19.8%
published (secondary) sources	97	37.6%	48	41.4%
other	88	34.1%	45	38.8%
Total	258	100.0%	116	100.0%

Table 8 indirectly corroborates what has been described in previous tables. Consistent with what was observed in Table 4 about a greater concentration of “accounting thinkers” in journal publications, a higher prevalence of biography (included in the “published sources” category) is evidenced in Table 8. The growing trend of works on accounting practices and the exten-

sion of studies to earlier historical periods fuel cognitive surveys that have been carried out with the aid of a research method based on archival evidence. This is a result that shows a change in the course of Italian historical studies breaking with the past [Zan, 1994].

*Confirmations and Discontinuities in AHR in Italy (1990-2004):* So far, we have dwelt with a “static” analysis of the collected papers according to the prescribed criteria. Now, it is interesting to examine the contents of the articles from a “dynamic” perspective to find evolutions and discontinuities and to interpret underlying meanings.

In terms of the first item, the findings are presented in Table 9. At this stage, the papers will be differentiated by three retrieval sources (international journals, national journals, and conference proceedings) on a yearly basis.

**TABLE 9**  
**Distribution of Papers by Source and Year**

Year	No. of Articles				Total %
	International Journals	National Journals	Conference Proceedings	Total No.	
1990		6		6	2.3 %
1991		9	25	34	13.2 %
1992		10		10	3.9 %
1993		5	15	20	7.8 %
1994	1	4	20 <sup>1</sup>	25	9.7 %
1995		10	16	26	10.1 %
1996		3		3	1.2 %
1997		12	12	24	9.3 %
1998		7		7	2.7 %
1999		6	14	20	7.8 %
2000				0	0.0 %
2001		6	19	25	9.7 %
2002	3	9		12	4.7 %
2003	1	8	21	30	11.6 %
2004	3	13		16	6.2 %
Total	8	108	142	258	100.0 %
Average per year	0.53	7.2	9.47	17.2	
Average per conference			17.75		

Table 9 marks the difficulties Italian scholars face attempting to publish in international journals. The large number of proceedings is related to the biennial SISR conferences. These meetings significantly affect the distribution of the publication data, which peak in the years in which the SISR conference is held. As to national journals, we found no noteworthy trend other than the inexplicable phenomenon that there were no papers published in the year 2000. On average, seven accounting history articles a year are published in Italian journals. Published meeting proceedings (all national SISR meetings, except that of 1994) show that the Italian business-economic academic community is still keenly interested in historiographic subjects. On average, 17.75 accounting history papers per national conference are presented. Dividing the total number of papers presented at meetings for all 15 years of our research sample, an average of 9.47 papers a year is obtained. This value relatively increases when added to the mean number of papers in the database published yearly in national or international journals. A mean indicator of the yearly contribution by Italian authors to accounting history subjects is 17.2, summing 0.53, 7.2, and 9.47.

Table 10 shows the distribution of papers according to time period and subject classifications. The data show a relentless interest in the “accounting thinkers” category, which points out a penchant for the great masters of the Italian past. The highest number of papers (35) in the period 1990-1994 is attributed to the extraordinary conference held in Venice to celebrate Frà Luca Pacioli on the 500th anniversary of the publication of his *Summa*. On that occasion, 12 papers were presented, significantly increasing the production of the period. Notwithstanding, ongoing research on past thinkers remains a peculiar aspect of AHR in Italy.

Another interesting aspect is the sudden increase in the number of publications in the 2000-2004 period about the “accounting profession.” This phenomenon could be explained by the evolution and internationalization of accounting principles (IAS/IFRS) as occurred in the last few years. Actually, since early 2000, we have seen much excitement about the enforcement of the IAS principles by member states. One last aspect to highlight is a substantial interest in the study of “accounting practices” and its increasing trend in the last ten years of the analysis.

**TABLE 10**  
**Distribution of Total Contributions by**  
**Context and Time Period**

	Frameworks	Accounting Thinkers	Accounting Profession	History of Accounting Disciplines	Accounting Practices	Other	Total
1990-1994	6	35	1	33	16	4	95
1995-1999	9	29	2	8	28	4	80
2000-2004	4	21	13	12	28	5	83
Total	19	85	16	53	72	13	258

Some comments are pertinent to the analysis of journal articles by context and time period as shown in Table 11. The “accounting thinkers” category continues to be widespread with 48 articles split into the three time periods reflecting a weak growth trend. The increasing interest in “accounting profession” in the period 2000-2004 is accounted for by the internationalization of accounting principles as previously mentioned. The “history of accounting disciplines” category shows an apparently inexplicable discontinuity from the 1990-1994 period (21 articles) to 1995-1999 (5 articles). It is triggered by the fact that Serra published 17 articles in the period 1990-1992 about the development of AHR based on articles published by *RIREA* from 1901 to 1990. The last interesting aspect to note is the clearly increasing incidence of articles about “accounting practices,” which rose from one in the period 1990-1994 to 11 in 2000-2004.

**TABLE 11**  
**Distribution of Journal Publications by**  
**Context and Time Period**

	Frameworks	Accounting Thinkers	Accounting Profession	History of Accounting Disciplines	Accounting Practices	Other	Total
1990-1994	2	11	0	21	1	0	35
1995-1999	5	19	1	5	8	0	38
2000-2004	3	18	4	6	11	1	43
Total	10	48	5	32	20	1	116

Another interesting indicator of the fervor in Italian AHR in the period under examination concerns new entrants into the research field as shown in Table 12. The column “AH Researchers” indicates the total number of authors or co-authors of journal articles or conference papers. The column “% of New

AH Researchers” shows the percentage of new AH researchers compared to the previous time period. The continuous expansion of the Italian AH community bespeaks the vibrancy of AHR in Italy.

**TABLE 12**  
**New AH Researchers in the 1990-2004 Period**

	AH Researchers	% of New AH Researchers
1990-1994	65	--
1995-1999	68	63.2%
2000-2004	84	63.1%

The last point to underscore concerns new AH researchers in SISR conferences, a factor that highlights the role of the SISR as a stimulator of AHR in Italy. Table 13 distinguishes the percentage of AHR “new authors” at each SISR conference from the total number. It refers to first-time paper presenters at a SISR conference.

**TABLE 13**  
**New First-Time AH Paper Presenters at SISR Conferences**

	1991	1993	1995	1997	1999	2001	2003
new authors and co-authors (A)	25	14	13	12	9	14	18
total authors and co-authors (B)	25	16	18	22	18	25	32
(A)/(B) %	100%	88%	72%	55%	50%	56%	56%

Table 13 shows the continuous entry of new AH researchers since the first SISR conference in 1991. In every conference, at least half of the participants are novices to AHR. Most of the AHR increase, as shown, is attributable to the propelling role of the SISR. There can be no doubt that the SISR has stimulated academic debate in AH locally and nation-wide, but what is its role in the international context that Italian scholars have to face?

*Internationalization Process of AHR in Italy: A “Weak Change”:* The analysis of data in Tables 2, 4, 5, and 9 pinpoints the difficulty in developing AH studies and publishing the results in international journals. In fact, the tables show, once again, that if we just look at the total value (258 essays), Italian authors have problems publishing internationally.

On one side, this issue of relative isolation is rooted in the national orientation of accounting itself in Europe up to the end of the 1980s [Hopwood and Schreuder, 1984, p. 1]:

Until recently accounting research in Europe has developed within quite tightly defined national boundaries. As has already been noted, the substantive research concerns and strategies were often very different. Education and research training and funding tended to be purely national concerns. The research and professional journals which existed were primarily nationally oriented and, if only for reasons of language, had quite narrowly circumscribed national readerships. With a few notable exceptions, there was little or no systematic cross fertilization.

The findings of the study confirm a phenomenon [Carmona, 2004] that non-Anglo-Saxon scholars are poorly represented in international journals, even if an “abundant production” of publications on the subject is growing nationwide. Our research in Italy identified 250 publications in the period 1990-2004, proof of an “abundant production” of Italian AHR, of which only four articles appeared in ISJ and another four in IGAJ. In addition, the difficulties in publishing in Anglo-Saxon journals suffered by non-Anglo-Saxons scholars, such as language, approach, and the consequences of accepting foreign papers [Carmona, 2004; Walker, 2005] contributes to significant delay in publication. Another common feature described in the international literature [Carnegie and Potter, 2000, pp 186-187] is the relatively small incidence of co-authored works (31 papers of 258) and the virtual non-existence of Italian scholars working with foreign ones (2 papers of 258).

There also exist domestic reasons that can help explain this lack. In Italy, there was little reward until recent years to publish internationally. In the past, international publication in accounting has not been particularly valued for academic advancement. It has been viewed suspiciously as a possible departure from the strong and rich mainstream domestic tradition. Only in the last decades has internationalization been clearly and increasingly addressed as one main point of an Italian accounting research agenda with its relevance recognized by an emerging new generation of scholars.

The evidence in AHR confirms this changing trend. A dynamic reading of the frequencies of previous tables suggests a positive, albeit “weak,” sign of a possible reversal in trend over the last few years. From 2002 to 2004, seven articles have been

published in international journals, four in specialist accounting history journals, compared to just one in the previous 12 years. This is a discontinuity from national journals where we do not find any noteworthy trends other than the shortfall of the year 2000. During this span of time, we emphasize the important role played by the SISR and by some Italian universities in encouraging young researchers in AHR.<sup>12</sup> The foregoing analysis pinpoints the SISR as a major contributor in propelling this change in national academia and halting a decline in Italian AHR.

The role played, or not played, by the SISR in this difficult path towards internationalization of AHR is a double-edged sword. The low number of international publications confirms that the SISR has not been able to increase the number of international works. The low level of international orientation in the past 15 years, especially given the large number of new researchers in the accounting history arena, supports the idea that the SISR has not been successful in breaking down the virtual border that surrounds Italian academia. In this sense, the prevailing role of the SISR has been the attraction of the young generations of academics towards AHR while maintaining links to traditional Italian roots.

On the other hand, we can observe that the SISR was not totally “neutral” in relation to the “weak sign of discontinuity” since four of the eight papers published in international journals were previously presented in congresses sponsored or organized by the SISR, as shown in Table 14.

In this perspective, the SISR appears an important arena to develop and present papers in AHR suitable for an international audience and capable of securing international publication. Considering the latter circumstance, the position of the SISR towards internationalization appears twofold. It has not been primarily committed to propelling internationalization, having a domestic horizon in its cultural promotion of AHR, but it has *de facto* supported, through its promotional activities and offering an arena to debate, the development of papers suitable for appreciation by an international audience. Indeed, in recent years, the mounting quest for internationalizing Italian accounting studies has motivated the SISR to greater interest and effort than in the past. In 2005, the SISR organized an international workshop on Italian accounting history and a special issue of

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<sup>12</sup>In particular, the Universities of Florence, Pisa, and Siena scheduled three selections of working papers for their doctoral programs, named “Author’s Paintings.”

an international journal was published based on this event [Cinquini and Marelli, 2007].

**TABLE 14**  
**Papers Published in International Journals**

Author[s]	Year	Title	Journal	Paper in SISR Congress
Zan, L.	1994	"Toward a History of Accounting Histories: Perspectives from the Italian Traditions"	<i>EAR</i>	NO
Antonelli, V., Cerbioni, F., and Parbonetti, A.	2002	"The Rise of Cost Accounting: Evidence from Italy"	<i>ABFH</i>	YES
Carmona, S. and Zan, L.	2002	Special Section: "Mapping Variety in the History of Accounting and Management Practices"	<i>EAR</i>	NO
Cinquini, L. and Marelli, A.	2002	"An Italian Forerunner of Modern Cost Allocation Concepts: Lorenzo De Minico and the Logic of the 'Flows of Services'"	<i>ABFH</i>	YES(*)
Bisaschi, A.	2003	"The Accounting System of Venerable Society of the Living and the Dead of Parma in Medieval Times"	<i>AH</i>	YES
Quattrone, P.	2004	"Accounting for God: Accounting and Accountability Practices in the Society of Jesus [Italy, XVI-XVII Centuries]"	<i>AOS</i>	NO(**)
Zan, L.	2004a	"Writing Accounting and Management History, Insights from Unorthodox Music Historiography"	<i>AHJ</i>	NO
Zan, L.	2004b	"Accounting and Management Discourse in Proto-Industrial Settings: The Venice Arsenal in the Turn of 16th Century"	<i>ABR</i>	YES

(\*) international conference celebrating Frà Luca Pacioli, sponsored by the SISR.

(\*\*) In the 2nd SISR Conference, Quattrone [1993] presented a first research paper on the accounting system of Sicilian Jesuit societies in the 18th and the 19th centuries.



## INTERESTS OF RESEARCH AND TRENDS IN ITALIAN AHR (1990-2004): A SUMMARY OF CONTENTS

An extensive investigation on the researched subjects can further enrich the picture of Italian researchers' penchant for accounting history, providing food for thought on trends of recent years. Even if our study fails to grasp the essence of every paper, given their large number, an overall picture of developmental trends of Italian AHR will emerge.

*Papers Offering "Frameworks"*: The interpretative frameworks category includes 19 publications addressing issues related to the historical development of "business management," the development of reference patterns in accounting history, the in-depth analysis of principles, and methods for AHR.

The subset of papers that details historical research includes explorative and methodological papers on the role played by historical research in business disciplines [Borgonovi, 1991; Ferraris Franceschi, 1991], connections between accounting and business history [Lipari, 1993; Ferraris Franceschi, 1997], and possible methodological approaches [Antonelli, 2004]. Other papers tend to offer criteria for a proper use of documental sources [Amaduzzi, 1997; Serra, 1997].

Then there are papers that offer general reference patterns for the development of accounting doctrines in Italy. For example, Zan's papers [1994, 1999] set in a critical perspective developments of Italian studies in accounting history by proposing interpretative patterns associated with a "process of establishment of a particular and distinctive national academic discourse of accounting" [Zan, 1994, p. 257], while Catturi's papers [1994, 1997a, b] offer different interpretations of the development and spread of the double-entry accounting method.

Finally, other papers focus on *economia aziendale*, in particular on its relations with accounting [Viganò, 1994]; its origins, development, and boundaries [Cavaliere, 1995a]; and its theoretical references in support of management control studies [Catturi and Riccaboni, 2001]. A recent paper by Zan [2004a] offers an original interpretation of accounting and management history studies inspired by studies in music history.

*Papers on "Accounting Thinkers"*: As shown in the previous section, a substantial number of Italian studies deal with the "life and works" of scholars who have left their mark on the evolution of the discipline. After all, it is universally recognized that

the Italian tradition in general and its accounting history in particular have seen a number of great scholars whose thought has been influential for ages. Therefore, it should not come as a surprise that we find, even in the last 15 years, a significant number of papers about such personalities as Pacioli, Zappa, Besta, Giannessi, Ceccherelli, and many others. Table 15 lists the authors and the number of studies about them.

**TABLE 15**  
**Studied Masters (No. > 3)**

Studied Author	No.
Fra Luca Pacioli	17
Amaduzzi	7
Besta	6
Zappa	5
Giannessi	5
Alfieri	4
Ceccherelli	3
other authors	38
Total of category	85

As many as 17 papers, nine of which come from the celebratory meeting of 1994, deal with Frà Luca Pacioli's thought. A substantial number of them highlight his skills as a mathematician as well as a business economist by studying his major works – *Summa de Arithmetica, Geometria, Proportioni et Proportionalità* and *Tractatus Mathematicus ad Discipulos Perusinos* [Calzoni, 1992; Cavazzoni, 1992; Amaduzzi, 1994; Antinori, 1994; Mari, 1994]. Others of the papers aim instead at extolling Pacioli's double-entry method [Rusconi, 1994; Turco, 2002].

The second most numerous group (seven) includes papers by Bianchi [1995], Bruni [1995], Caselli [1995], Cavaliere [1995b], Paolone [1995], and Sica [1995], commemorating the profile of Amaduzzi after his death.

Another substantial portion of the papers deals with Besta and his concept of control [Paolini, 1991; Riccaboni, 1991] or the problem of balance valuations [Gonnella, 1994]. Di Stefano [1991] analyzes the causes behind the crisis of Besta's system, while Monorchio [1996] extols him as the reformer of accountancy in public administration. Finally, Bruni's article [1996] makes a new comparison between Besta's thought and Zappa's theories.

At odds with Besta, many authors also deal with Zappa. Quagli [1991] reformulates his "planning" concept, Mongiello

[1998] the determination and reliability of accounting principles, while Canziani [1999] deepens his theories critically. More recently, Coda [2002] analyzed the contributions Zappa made to the study of accountancy.

A further group of papers deals with the Tuscan-trained master Giannesi. Bertini [1993], Corticelli [1993], and Ferraris Franceschi [1993] commemorate his death by recalling the contribution he made to *economia aziendale* and accountancy, while Antonelli [1994, 1995] recollects his contribution to cost accounting through the “Kreislauf” model.

More categories can be identified which include the study of other scholars who have made a substantial contribution to the development of accounting issues and who have been studied by several authors. These seminal thinkers include Alfieri [Anselmi, 1991; Cinquini, 1991; Paris, 1991; Palumbo, 1999], Ceccherelli [Berti, 1991; Fazzini, 1999; Terzani, 2001a], Amodeo [Potito, 1999, 2003], Cerboni [Cillerai, 1991; Antonelli, 1992], De Minico [Cinquini and Marelli, 1994, 2002], Flori [Quattrone, 1994; Bartocci, 1997], Villa [Maggi, 2001; Mari and Bartocci, 2001], Rossi [Cilloni, 2002], De Gobbis [Giannetti, 1998], Riparbelli [Pozzoli, 1991], and Masi [Roffia, 2004].

*Papers on the “Accounting Profession”*: In the group of articles devoted to the accounting profession, we can distinguish three major areas of interest. The first pertains to analyzing the historical evolution of the profession, with special reference to distinct time periods. Barone [1999] looks at the progress of the profession from the 16th to the 20th century; two articles by Camodeca [2002, 2003] focus on changes that occurred from the 18th century to the present day. An article by Antinori [2003] looks at the origins of 19th century methods; one by Ferrari [2003] traces the establishment of colleges and associations for the accounting profession in the 19th century and changes that occurred over a 400-year time span through the 20th century. Articles by Cappelaro [1997], Massari [2003], and Mazzola [2003] focus on the evolution of the cost accounting profession in the 20th century. Servalli [2003] compares distinctive features in the evolution of the accounting profession in Italy and France.

Another research area concerns the activities of auditors. Once again, works focus on historical origins and the impact of recent changes in legislation [Iannoni Sebastianini, 2003; Bianchi, 2004; Bruni, 2004a]. De Leonardis [1994] examines an experience of the early Middle Ages in Genoa as an example of the first Italian auditors.

A third approach pertains to the study of the relationships between the profession and universities. In particular, Terzani [2001b] describes the relationships with the Faculty of Economics in Florence, while other authors look more broadly at the relationships between the profession and accounting curricular innovations over time [Cavazzoni and Mari, 2003; Ciambotti, 2003].

*Papers on the "History of the Accounting Discipline":* Papers on the history of the accounting discipline include the in-depth analysis of the evolution of Italian business management philosophy, particularly distinct historical periods and specific subjects (accounting tools, principles, concepts). Unlike publications that focus on a single author's thought, most frequently biographies, these papers refer to a number of authors whose contributions are set in a wider context.

Most papers in this group (33 of 53) can be considered studies in the history of accounting thought of specific historical periods. No fewer than 28 of these feature the 20th century; one deals with both the 19th to the 20th century [Canziani, 1993]; one with the pre-Pacioli period through the 14th century [Canziani, 1994b]; one on Sumerian accounting [Galassi, 1997]; and one on Roman accounting [Castagnoli, 1991]. Most of the papers on the 20th century were written by a single author, Luigi Serra [1990a, b, c, d, e, 1991a, b, c, d, e, f, g, 1992a, b, c, d, e, f], all published in the three years 1990-1992 in the *Rivista Italiana di Ragioneria*. Other prominent papers were authored by Amaduzzi [1993, 2001, 2003] concerning 20th century scholars and doctrines. Included are two papers, one by Canziani [1997] that focused on the development and the role of Gino Zappa's thought in changing Italian business studies, and one by Cavalieri [2001] on the relationship between accountancy and *economia aziendale*. Some aspects of Italian business philosophy, such as the connection between business studies and the corporative doctrines of Fascism, have also been addressed [Cinquini, 2003, 2004].

Another identifiable sub-category consists of papers that we can define as focused on the evolution of accounting concepts, tools, and methods (13 papers). Subjects addressed range from the evolution processes of inventories [Pezzoli, 1991], accounts [Catturi, 1992], accounting and entry methods [Turco, 1999], to the origin of the double-entry method [Antinori, 2001]. In this area as well, are papers focused on the centrality of the "capital" concept on accounting theory and its evolutionary impact on

accounting systems [Cerbioni, 1991, 1994]. There is no shortage of papers on the role of specific figures in the post-Pacioli period who popularized double-entry principles and practices [Perrone, 1994a]. In addition, papers on specific subjects, such as the development of the concept of “internal control” and “management control” in doctrine and practice [Leardini, 1997; Bergamin, 2003]; “accounting standardization” [Di Pietra and Barretta, 2001]; and the origins of “theories of administrative functions” [Calderini, 1994] are also worth mentioning. We can include in this sub-category Toninelli’s [1990, 1999] papers on the role of accounting books in business historiography.

Finally, we can identify a set of seven papers on the historiography of external financial reporting [Meriggioli, 1991; D’Oriano and Pizzo, 1993], the evolution of problems of evaluation [Cavaliere, 2003], and the origin and evolution of accounting principles [Di Cagno and Turco, 2002; Bruni, 2004b]. Extremely interesting in this respect are the issues of the significance and evaluation of goodwill from an historical-evolutionary perspective, addressed by Giovanelli [1994] and Puglisi [1999].

*Papers on “Accounting Practices”*: This category includes all the papers in which the study of accounting records within studied organizations is the essential tool for historical analysis. For this research, the accounting perspective of the historical analysis of business contexts brings these publications under the “papers in accounting history” category and separates them from business history, which is not necessarily bound to the perspective of accounting investigation.

*Papers on the “Public Sector”*: We believe that two main categories of accounting can be distinguished within the public-sector set – public administrations and local state institutions, on the one hand, and public institutions (hospitals, railways, universities, theaters), on the other.

The first category includes papers by Germani [1999] on the evolution of state accountancy in the 20th century, by Camodeca [2001] on the contribution of accountancy to the state, and by Anselmi et al. [2003] on the evolution of the figure of the general accountant of state in the 19th and 20th centuries. Interesting are the discourses on the 18th century art of accounting provided by Fanni [1995] on the finances of the House of Savoy in Sardinia and by Kunz [2001] on the Kingdom of Piedmont and Sicily. Some experiences of local historical accounting have been highlighted by Anselmi and Zuccardi Merli [1994] on the City-

Republic of Genoa in the 14th century, by Riccaboni and Barretta [1995] about the dominion of the Savoy family in Alghero, and by Cannata [2004] on the Grand Duchy of Tuscany.

Remarkable is the development of historical studies in the not-for-profit category. As many as four papers concern hospitals, especially Riccaboni et al.'s [1997] study of the accounts at *Spedale Santa Maria della Scala* in the 15th and 16th centuries, and, subsequently, Ianniello and Di Toro's [1998] on the details of its control system. Two other hospital papers were Capocchi [2001] on the accounting system at *Spedale S. Luca* in the 18th century and Vagnoni [2003] on *Ospedale Sant'Anna in Ferrara* in the 17th and 18th centuries. Through a study of their balance sheets, Pezzoli [1995] and Rusconi [1999] investigated the history of the Sardinian Railways and the tram company of Bergamo, respectively. Interesting is the paper by Sargiacomo [2003], who looked at the accounting methodology used by the Universitas of Penne in the 17th century. Antonelli et al. [2004] offered an extensive view of 18th century accountancy, analyzing the accounting system of *Teatro San Carlo* in Naples. Finally, we find historical accounting papers ranging from the Venice Arsenal in the 16th century [Zan and Zambon, 1997; Zan, 2004b], the Castle of Crotona [Mussari and Mussari, 2004], to the coastal towers of Sardinia [Melis, 1995].

*Papers on "Enterprises":* Within the "accounting practices" category, there are 30 papers on "enterprises," the most numerous component. Through an in-depth analysis, we can distinguish three categories – banks, manufacturing companies, and commercial enterprises (family businesses in the 18th century).

The first category includes works on documental analysis, in particular the analysis of the balance sheets of Sardinian banks in the 19th and 20th centuries [Pavan and Mulas, 1995; Poddighe, 1995], the bank *Banco di Sicilia* [Allegra, 1993], and a general accounting paper applied to banks [Pontolillo, 1997]. Interesting also is the analysis of the archives of the bank *Monte dei Paschi di Siena* [Catoni, 1991], an extensive study on the evolution of the Medicis' bank in the 14th and 15th centuries by Fazzini and Fici [2001], and a paper on the accounting of the bank *Banca Commerciale* in the 1930s by Toninelli [2004].

Record keeping enables us to gain an insight into the accounting history of many Italian manufacturing companies. Poddighe et al. [2003] conducted historical analyses on the balance sheets of Piaggio in the early 20th century; Coronella et al.

[1997] used accounting records to reconstruct the first 30 years in the life of Fiat company; Rossi [1997] studied the history of Messrs Legler in the 18th century; and D'Amico [1993] highlighted the sensitivity of the Sicilian steamboat company to economic/financial information in the 19th century. The study using the oldest archival evidence is the one by Allini [2001] in which the author analyzes the origin and development of the Royal Factory of San Leucio, specializing in the manufacture of silk in the 18th century. Within this sub-category, we find five papers on the historical analysis of manufacturing companies through their cost accounting systems. Cerbioni [1997] and Avallone [2002] have gone into detail on the industrial accounting system used by Ansaldo in the 19th and 20th centuries; Quagli [1998] on that of Piaggio in the second half of the 20th century; and Antonelli et al. [1999, 2002] on the iron foundry Magona d'Italia in the 19th and 20th centuries.

The third category brings together a number of papers on trade exchanges in different centuries – papers by Perrone [1991, 1994b] on the accounts of Tuscan companies in the Middle Ages; Di Pietra and Di Toro [1993] who analyze business relations between Ingham and Florio in the 19th century; an analysis of trade in Cagliari in the second half of the 18th century by Pillai [1995]; and a paper by Ianniello [1991], who looks at the exchange-pegging and exchange-accounting criteria used in Genoese fairs in the 16th and 17th centuries.

*Papers on “Charities and Non-Profit Organizations”*: Within this category, the widest group of accounting practices can be found and some particularly interesting papers. The first is about a charity shelter in the late 18th century, *Pio Albergo Trivulzio*, the subject of a work by De Lucia and Ferrone [2003]. A second is about a medieval charity trust, the *Venerando consorzio dei Vivi e Morti* of Parma, whose accounts are analyzed by Bisaschi [2003]. This organization, founded by priests and laymen to manage the donations coming from the Cathedral of Parma, had been established to do charity work for the poor and to offer mass at the city cathedral. A final paper worthy of mention traces the foundation of Messrs Legler. Here, Rossi [1999] studies the importance of record keeping to aid in the study of accounting history.

*Papers on “Churches and Monasteries”*: The last sub-category of “accounting practices” refers to church organizations. In this category, we can distinguish two main lines of research – one

about works on cathedrals and seminars and the other about religious organizations, mainly monastic ones. We will also distinguish a third line of research aimed at analyzing the accounting systems adopted by religious organizations at specific times in history.

The first of these directions includes papers by Di Pietra [2003], who examines the accounting books from the archives of the Archbishops' Seminar of Siena in the second half of the 17th century, and one by Riccaboni et al. [2003] detailing the accounting tools used to define power relations within the Cathedral Vestry Board of Siena in the 14th century.

The second line of research includes a host of papers about monasteries, mainly those of the Benedictine order. Garigali [1993] and Di Giacomo [1993] both analyze the accounting practices of a Benedictine monastery in Messina in the early 18th century; Serra [1995, 1998a, b, 1999, 2001] describes the supplying and productive centers of the Monastery of Montecassino; and Barnabè and Ruggiero [2004] study the forms of the accounting control system adopted by the Monastery of Monte Oliveto Maggiore in the 20th century. We also find interest in other religious orders, such as the Jesuits. Quattrone [1993] reconstructs, through documental evidence, the accounting system of Sicilian Jesuit societies in the 18th and 19th centuries; Puglisi [1993] investigates the accounting documents of the Jesuit fund at the State Archives of Palermo; and Quattrone [2004] shows how the accounting system used by the Society of Jesus interfaced with the hierarchical organization of the Order in the 16th and 17th centuries.

We can also find an additional line of research, a minor one, in which the accounting systems of religious organizations in general are surveyed rather than case studies. This group includes papers by Sargiacomo [2001], who shows the pros and cons of the accounting entries used by the Benedictine monks in the 16th century, and by Di Pietra and Di Toro [1999], who study in-depth the purposes and content of accounting entries made by religious organizations in the Renaissance.

*"Other" Papers:* The last grouping is additional studied phenomenon that cannot be easily classified in any of the previous categories. Di Toro [1991] links the origins of ethics in accounting principles to monastic moral rules; Amaduzzi [1995] analyzes the teaching of accounting history in Italian universities; Galassi [2001] compares Italian historians with their international brethren; and Molina and Ragusa [2001] consider the involve-



ment of female figures in accounting studies of some European countries.

## DISCUSSION AND CONCLUSIONS

In carrying on the research, we focused on dimensions that seemed to us particularly important in such a wide database and over so significant a length of time. Objects and methods have been highlighted that assess the changes that have occurred in Italian AHR. Other aspects, such as the theoretical framework in the papers and authors' affiliation, have not been deeply investigated.

In the '90s, a significant boost took place in Italy in both the qualitative and quantitative development of AHR. We too can speak proudly of the "roaring nineties" for our country. The features of this growth are different from those identified by F&R [2005] that stress the debate between "critical" and "traditional" historians on issues such as objectivity, partisanship, the importance of archival research, and factualism.

Due to Italy's poor exposure in this international debate and the features of AHR explained in previous paragraphs, we now should ask ourselves the reasons for the sudden and extensive interest towards accounting history and whether the research work being done now differs from the past. Starting with the above-mentioned paper by Zan [1994], some distinctive features of Italian historiography and the context within which it developed are highlighted. In particular, Italian historical research has been oriented toward identification of the relevant steps in the development of the doctrine of *economia aziendale*. The substantial "parochialism" of the evolutionary picture given to the history of Italian business doctrines has diminished the international context of Italian AHR. As a consequence, Italian AHR has moved in more traditional paths, focused as it is on key individuals and their thought. In this context, different theoretical accounting positions have pinpointed their foundation on masters of the past or on streams of thought in the Italian tradition that have determined our historical research agenda. Thus, Italian research directions have remained substantially closed with respect to the stream of "new" accounting history developed outside of Italy.

Although this orientation in Italian AHR remains prevalent, the findings of the research suggest that in the period 1990-2004, a broadening tendency is in evidence away from the traditional, almost exclusive, focus on the thought of the those authors who

marked the development of the Italian business doctrine. An increased interest in accounting practices within different types of organizations and in the progress of the accounting profession is evidence of the expansion into fertile lines of study for advancing the historical knowledge of accountancy. Cost accounting practices have begun to be explored in Italy, particularly by historians using archival research and the case-study method. Generally speaking, this period has witnessed the full recognition and promotion of historical research related to large and small-scale business and to private and public companies, giving value to accountancy's perspective [Ferraris Franceschi, 1997]. But it is above all the development of archival research, aimed at studying in-depth the evolution of accounting practices in different pre-industrial settings, which seems to be one of the most remarkable aspects of the evolutionary trends in AHR in the period considered. This trend is characterized by a progressive shift towards historical research that is more and more based on documental evidence and aimed at understanding the real functioning and use of accounting in different historical-institutional settings. In particular, the interest in non-profit organizations and churches bears witness to the important contribution that the history of Italian accountancy, with the wealth of sources that comes from its unique historical events and the institutions that have made its history, can give to research on accounting's evolution in early industrial settings.

This shifting towards new subject matter and methodological approaches in Italian AHR reflects the increasing attention given by the younger generation of Italian academics researching accounting history to international experiences, subject matter, and methodology. In recent years, an increasing attention has been given to the internationalization of accounting education with new connections to foreign universities and networks among Italian and E.U./U.S. researchers. The development of this trend has grown visible and could be extremely fruitful in the future given the wealth of remarkable company and institutional archives still unexplored in Italy. On the other hand, within Italian research works that provide references for the development of the discipline, no significant break from the past can be found. The centrality of Gino Zappa's work is unanimously recognized in the development of the discipline in the 20th century. Nevertheless, we can find some interesting new directions.

As far as the first point is concerned, there is no doubt that the *SISR* has played a propelling role in spurring historical

production during the period considered, although maintaining an ambiguous position in the process of internationalization. The biannual meetings of the SISR attract great participation. Younger generations of Italian academicians present their papers there and put themselves to the test. While the recognition and appreciation for historical research in this domain are undoubted, the echo remains of that Italian academic context which gives pride of place to national origins and roots that Zan [1994, p. 297] called the “unwritten rules of the knowledge game as it is played differently within different academic communities.” Historical research into accounting has always played an important role in the different “accounting thinking schools” in Italy [Onida, 1947; Melis, 1950; Giannessi, 1954, 1980; Amaduzzi, 2004] since it has also been used for building dominant positions in the theoretical (and academic) arena [Zan 1994]. Such importance has not gone missing, but the role of accounting history seems to be played not so much within the accounting schools vying for leadership, but rather stresses a difference and an identity for Italian accounting. The widespread, extensive interest in AHR in Italy over the last ten years can be associated with accounting scholars’ search for a deeply-rooted, distinctive identity vis-à-vis other representatives of the disciplines of Italian *economia aziendale*. In this, the traditional insistence of the “masters” that their “pupils” investigate the historical roots of the discipline plays an important role in their education and, as a result, AHR is a prominent component in the career advancement of young Italian academics.

Second, a question arises concerning the role of the SISR in the process of internationalizing Italian AHR. The ambiguity of the role played in this respect by the SISR may be recollected by the concept of “emerging strategy” in organizations [Mintzberg and Waters, 1985]. The SISR’s deliberate strategy since its foundation has been clearly domestic in aims and activities, but in the process of implementation, it has comprised and supported the emergence of new AHR on the part of the young, internationally oriented generation of researchers. In fact, four of the eight articles published in international journals were papers presented at SISR conferences, confirming the importance of such events for Italian researchers. This discontinuity has appeared most recently.

These issues and trends in the internationalization of AHR also find confirmation in considering the impact that the emerging international approaches to AHR in the '90s had in Italy. We refer, in particular, to the new accounting history and the

extent of its impact on Italian historiographic development in the last decade. Several papers have now appeared [Cinquini, 2003; Quattrone, 2004; Riccaboni et al., 2005<sup>13</sup>] in which characteristics of the new accounting history can be found. They address historical subjects, some of which are even very delicate in terms of Italian historical “sensitivity” (e.g., corporative Fascist ideology and accounting) with approaches that are keen on the socio-institutional dimension of accountancy in different settings. Summing up, we can state that the “parochial” traits identified by Zan [1994] are still the majority, even with a recent and growing propensity for opening up to the world, especially if we look at the increase in the number of publications in international journals since 2002. The process of internationalizing Italian AHR results is still poor and more effort has to be devoted to this project.

There may be a number of questions rising from the findings discussed in this paper. One of the most important and relevant is, why were institutions and practices rather than individuals less a focus of study in Italy? This would be an issue worthy of greater analysis and further research to which the paper represents only a first step forward.

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<sup>13</sup>These papers have subsequently been published [Riccaboni et al., 2006; Cinquini, 2007].

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## **THE DEVELOPMENT OF ACCOUNTING IN EUROPE IN THE ERA OF SCIENTIFIC MANAGEMENT: THE ITALIAN ENGINEERING CONGLOMERATE, ANSALDO, 1918-1940**

*Abstract:* Utilizing archival materials, this paper examines the case of the Genoa-based firm, Ansaldo, which, by the early decades of the 20th century, had emerged as a major force in the inter-related fields of engineering, shipbuilding, and metal and steel manufacture in Italy. Following financial problems immediately after World War I and during the 1920s, the company was subsequently taken under the umbrella of the Italian State's financial holding unit, the Institute for Industrial Reconstruction (IRI), in the 1930s. Utilizing Lewin's theory of change as a framework for investigating change in management accounting, the paper examines the internal and external factors influencing the development of cost/management accounting at the company. These are also examined against the background of the development of scientific management, both in Italy and elsewhere.

### **INTRODUCTION**

It has recently been stated that management accounting is "not simply a technical activity but a set of practices that produce and reproduce not just organizational life but also social and economic life at a more macro level." Thus, it is appropriate to "fully understand management accounting," that one should "examine its social, economic and political context and

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recognize the role of power and conflict" [Cooper and Hopper, 2007, p. 208]. This is not to deny the need to examine events and factors at play within an individual context, but rather to emphasize that individual organizations do not exist in a vacuum, and that changes in accounting for managerial purposes will be influenced by factors both internal and external to the organization. This is particularly the case in relation to the focus of this study, the Italian engineering conglomerate Ansaldo during the period between the two world wars.

The interwar years were a period when scientific management began to come of age, not only in America but also in Europe. While there has been much research on the development of scientific management in different countries [Nelson, 1980, 1992; Moutet, 1992], the relationship between the growth of a scientific approach to management and the development of cost and management accounting is little understood. In the American context, Chandler [1977, 1990] has pointed to the growth of large, multidivisional M-form corporations between the wars with the development of managerial hierarchies and accounting techniques such as standard costing and budgeting. While Chandler has suggested that it was the growth of the former which gave rise to the latter, Johnson and Kaplan [1987, p. 21] argue that the link was possibly the other way around, that the development of these accounting techniques may have made possible the growth of the large, M-form corporation. In work relating to the Dowlais Iron Company in the mid-19th century, Boyns and Edwards [1997] have suggested that the relationship between the emergence of large firms and the development of cost/management accounting may have been the result of a symbiotic, rather than a causal, relationship [see also, Alford, 1976].

A key element in the link between the growth of large businesses and developments in accounting in the early 20th century would therefore appear to be the development of a more scientific approach to business management. Thus, accounting historians have seen the early decades of the 20th century as a crucial period for the advancement of cost accounting, not the least due to the development of costing systems, the use of more scientific methods of overhead allocation, and the introduction of standard costing and budgeting [Solomons, 1952; Garner, 1954; Sowell, 1973; Chatfield, 1977; Epstein, 1978]. While budgeting and standard costing have been seen as an essentially American phenomenon [Wells, 1978; Locke, 1984; Johnson and Kaplan, 1987], the extent of their adoption in the U.S. is not known with any degree of accuracy. Indeed, Fleischman [2000]

has questioned the extent of the adoption of scientific management by 1920, suggesting that even by 1940 its use in the U.S. was limited.

In Europe, research into the links between scientific management and the development of cost/management accounting has generated a somewhat confused picture. In Britain, Loft [1986, 1990] has suggested that, in the 1920s, scientific management reinforced the positive impact of World War I on costing systems in British firms. However, the extent to which scientific management was adopted in Britain in the interwar period is still far from being known with any degree of accuracy, though there was clearly an increasing emphasis on the use of piecework systems and, from the mid-1920s, the Bedaux system [Littler, 1982; Whitston, 1996, 1997; Smith and Boyns, 2005]. Nevertheless, examples do exist of companies adopting either standard costing or budgeting [Boyns, 1998a, b] or both, sometimes in conjunction with the adoption of scientific management, such as the case of Hans Renold Ltd. [Boyns et al., 2000; Boyns, 2003]. The adoption of standard costing and budgetary control in the interwar years, however, was patchy with no clear link emerging as to company size or ownership/governance structure [see Quail, 1996, 1997; Boyns et al., 2000] or industrial sector. Boyns et al. [2004] found some limited evidence of a growing interest in standard costing in the British chemical industry before World War II, while in the iron and steel industry, Edwards et al. [2002, 2003] found a reluctance to adopt such techniques among most, though not all, companies before the 1950s and 1960s. In the engineering industry in the west of Scotland, evidence suggests a similar reticence [see McKinstry, 1999; Fleming et al., 2000].

In France, despite the interest shown in scientific management by vehicle manufacturers such as Louis Renault and Marius Berliet, standard costing failed to be implemented in any French business before World War II, though an increasing number adopted budgeting from the mid-1920s [Berland, 1999; Berland and Boyns, 2002]. According to Zimnovitch [1997], the failure of standard costing to appear in France until the late 1950s and early 1960s, in part reflects the attitudes of French accountants. Concerned as they were during the interwar years to secure professional status for themselves, French accountants favored the *prix de revient* method – full costing based on the integration of costing within the financial accounting system – thereby effectively establishing a barrier to the implementation of standard costing which was depicted as a “non-account-

ing” method. It is possible that similar forces were at work in Germany where Coenenberg and Schoenfeld [1990, p. 97] have noted that, during the period 1900-1933, internal and external accounting within firms was coming to be viewed as part of a single, unified system.

Against this background, this paper attempts to throw light on the link between the development of scientific management and that of cost/management accounting in Italy between the two world wars through an examination of the case of Ansaldo, a major Italian engineering, shipbuilding, and metal manufacturing conglomerate. This company constitutes a particularly interesting case study for many reasons. First, the company was one of the most important firms on the Italian industrial scene throughout the early decades of the 20th century as the largest and most important business in Italy during World War I. Furthermore, at various times it was involved in relationships with both European and non-European companies.<sup>1</sup> Second, its story is particularly representative of a particular way of doing business; namely, close links with government, a method which was characteristic of the early stages of industrialization in Italy and which impacted the development of management techniques within the company. Third, Ansaldo belongs to a sector which, in many countries, was in the forefront of the development of cost accounting techniques and the use of cost information for internal management purposes. Thus, a study of Ansaldo can reveal not only what happened in a major Italian firm during the early decades of the 20th century, it can possibly shed light more generally on developments that can be contrasted with those in other countries, both in Europe and in America.

Our analysis of management accounting change at Ansaldo is underpinned by the framework provided by Kurt Lewin’s theory of change and will proceed as follows. In the next section, we examine the issue of management accounting change generally, illustrating how Lewin’s theory provides a potential framework for historical research into this topic, enabling as it does the inclusion of the role of human agents and contextualizing influences in such change. This is followed by an examination of the development of scientific management in Europe during

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<sup>1</sup>In April 1930, the *Mechanical Engineer*, the official Journal of the American Society of Mechanical Engineers, published a special edition in order to celebrate the 50th anniversary of the Association. It published a Hall of Fame comprising 106 distinguished engineers, including F.W. Taylor, A. Carnegie, H. Bessemer, etc., among whom only Pio Perrone, sometime chairman of Ansaldo, was Italian [quoted in Fasce, 1993].

the study period to provide the contextual background for our case study of Ansaldo. The case study is split into two sub-sections, corresponding to the periods 1918-1933 and 1933-1940. The year 1933 represented an important landmark for Ansaldo as it came under the control of the State's new industrial holding arm, the IRI (*Istituto per la Ricostruzione Industriale*), an event which led in 1935 to the appointment of Agostino Rocca as chief executive. For each period, we examine the archival evidence to determine the key factors related to the development of both scientific management and cost/management accounting and the links, if any, between them. We then review our findings in the light of European and American contexts.

### CHANGE IN MANAGEMENT ACCOUNTING

In the last six years, two special editions devoted to the theme of management accounting change have appeared in *Management Accounting Research*. In the first, editors Burns and Vaivio [2001, p. 392] pointed out that, "Change is an exciting but problematic concept, defying definition and structured analysis." In the more recent, Busco et al. [2007, p. 125] suggest that, as a result of the proliferation of studies over recent years, the time has come for "systematizing the analysis of management accounting change along some key dimensions which can prompt some further reflection." In this pursuit, they suggest four dimensions: "the agents and objects of change; the forms and ratio of change; the space and time of change; and the interplay between change and stability." Given the rapid development of this literature, it is not surprising that there is no single, generally accepted theory of change in management accounting. Indeed, some authors have queried whether the emphasis should even be on change. Quattrone and Hopper [2001] suggest that perhaps it ought to be on "drift," while Granlund [2001, p. 161] is more concerned with "stability." Granlund went on to note that stability and change can co-exist, while "continuity of accounting practices over time is a result of a large number of issues that take effect on various levels of organizational operations."

One framework which can be used to analyze such change or stability is Kurt Lewin's theory of change. Although this theory relates to a planned approach to managing proposed change, his ideas can be used to understand and interpret, retrospectively, developments that have already occurred. Lewin's model comprises three stages – "unfreezing" of the current equilibrium or status quo, a necessity if people are going to be

motivated towards change; “moving” to a new equilibrium by changing what needs to be changed; and “refreezing,” making the new equilibrium permanent. Unfreezing is necessary in order to overcome the strains of individual resistance and group conformity and can be achieved in three ways: (1) increasing the forces driving change, (2) reducing the forces resisting change, or (3) some combination of (1) and (2). Moving can also be encouraged in three ways: (1) persuading employees that the current status quo is not beneficial to them and encouraging them to explore new possibilities; (2) getting them to work together on a quest for new and relevant information; and (3) connecting the group view to that of a well-respected, powerful leader or leaders who support(s) change. Refreezing is vital to successful change. Without it, there is the strong possibility that there may be a reversion to the previous status quo. Hence, it is vital that the new values generated are integrated into the community’s traditions and a balance achieved between the driving forces and the resisting/restraining forces. If there is such a balance, then the new position will be an equilibrium since change only occurs when the strength of one set of forces (either driving change or resisting it) is greater than that of the other set of forces.

Although Lewin’s theory was advanced in the 1940s, with many other theories of change developed since (e.g., complexity theories), it can be argued that it forms the basis of all modern approaches to change [Burnes, 2004]. Indeed, it has been argued that most theories of change are essentially variations on Lewin’s basic model. “Scratch any account of creating and managing change and the idea that change is a three-stage process which necessarily begins with a process of unfreezing will not be far below the surface” [Hendry, 1996, p. 624]. Lewin’s articulation of a stage model of change is particularly useful for historians since it enables a whole range of potential factors to play a role. For Busco et al., the key issue that has to be addressed by scholars is “to locate the agency prompting the whole process” of management accounting change. Previous authors on the subject have suggested a wide range of possible agencies for change, from human actors to non-human actants, sometimes placed within “broader contextual issues, related to certain institutional pressures, political decisions, economic imperatives, and some combination of them” [Busco et al., 2007, pp. 129-130].

Although it may not be as all-embracing as social cognitive theory which recognizes the potential impact of environmental influences, personal factors, and attributes of the behavior itself, Lewin’s theory does allow for the possible influence of

key persons or groups; “change agents” in the terminology of Niehoff. Granlund [2001], for example, emphasized the importance of a key individual, one of the firm’s financial managers, in producing change at a Finnish food manufacturer. Individuals, however, can act both as a barrier to change and as a focal point for change, with the same individual possibly acting as a barrier on one occasion and a focal point on another. Management accounting change, however, rarely takes place in a vacuum. As Otley [2001, p. 260] has pointed out, “Accounting systems are often implicated in the wider processes of organizational change, providing both a vehicle through which such changes can be promoted but also a potential rigidity and barrier to change.” Research in management accounting has suggested that major developments in organizational structure and accounting systems require motivators, catalysts, and facilitators, but are often held back by barriers [Innes and Mitchell, 1990; Cobb et al., 1995], including the attitude of personnel and existing organizational structures and cultures [Markus and Pfeffer, 1983; Roberts and Silvester, 1996]. To become established, new systems of accounting have to secure legitimacy, and they must develop a workable relationship between the languages of production and accounting [Scapens and Roberts, 1993]. Such ideas clearly resonate with the framework suggested by Lewin. Hence, we adopt his theory as a framework for our discussion of management accounting developments at Ansaldo during the study period.

#### THE DEVELOPMENT OF SCIENTIFIC MANAGEMENT IN EUROPE, 1918-1940

As Nelson [1992, p. 16] has indicated, there were only a few stirrings of scientific management in Europe before World War I, with change being uncoordinated and gradual. The war and its aftermath, however, provided something of a stimulus with industrialists, unions, and governments in most countries all coming to view scientific management in a more positive light. Most noticeably, post-war, pre-Depression Europe was characterized by a new tolerance among workers and union leaders and by the emergence of associations dedicated to the promotion of scientific management. In many countries, most notably in Germany [Nelson, 1992, pp. 2, 23-24], this found expression in the idea of rationalization, a broad social concept aimed at leading to a “better society.” However, the Great Depression appears to have diminished the attraction of American ideas and its European surrogate, rationalization.

The development of rationalization movements after 1918 was widespread throughout Europe, in countries like the U.K. still generally committed to laissez-faire economics, in ones like Germany where the state played a guiding role, and in those such as Russia with virtually total state control. Italy clearly was in the last category as the State played a significant role in economic, political, and social affairs. While the early stages of Italian industrialization, through 1920, took place in a “politico-industrial setting which left space for political and trade union liberties and for the development of forms of economic democracy, ...[d]uring the 20 years of fascism [from 1922 to 1943], that liberty and development were sacrificed” [Bonelli, 1994, p. 629]. Fascism was both a bureaucratic and political system, designed not only to control the working classes through influencing everyday life, but also to reduce foreign competition, thereby sustaining national capitalism [Costa et al., 1978]. Overall, it is commonly agreed that Fascism operated as a strong institutional mechanism which protected the large national corporations due to the state’s close connections with big financial interests.

As in other European countries, with the notable exception of Britain, a national organization dedicated to the promotion of scientific management was established in Italy in January 1926. This organization, *Ente nazionale italiano per l'organizzazione scientifica del lavoro* (ENIOS), represented the institutionalization of the introduction of scientific management principles. It was promoted following changes in Mussolini’s cabinet in 1925 and the appointment of the engineer, Professor Giuseppe Belluzzo, as Minister of National Economy. A major supporter of Taylorism in the interwar period [Fauri, 1999, p. 101], Belluzzo started a campaign for industrial reorganization which favored concentration of industry, increasing the size of business units, and encouraging internal reorganization. In 1926-1927, the *Consiglio Superiore dell'Economia Nazionale* (Supreme Council of National Economy) decided to make instruction in scientific management compulsory in all technical schools and institutes in Italy and to “introduce the most modern methods of industrial organization into the chief Government departments and the State industrial undertakings, by way of setting an example to the nation as a whole” [Devinat, 1927, p. 85].

Although Belluzzo’s campaign was supported by *L'organizzazione scientifica del lavoro*, a review published by ENIOS which enjoyed widespread circulation with 15,966 subscribers in 1930, mainly in northern Italy, his approach



did not find sympathy with northern industrialists. In 1928, the newspaper, *L'informazione industriale*, an emanation of Turin industrialists, wrote that [quoted in Fauri, 1999, p. 102]: “rationalization...means demolishing our premises and building new ones, changing all our machinery and concentrating factories producing similar products...even though we are not in the least financial experts, we can promptly and surely say no.” Indeed, Sapelli [1978, p. 62] has suggested that within the “standardization” process of this period, the accent was more on “unification” of materials and equipment than on “normalization”, i.e., the growth of large-scale mass production.

Thus, in Italy, as in other countries across Europe, many industrialists remained skeptical of scientific management during the 1920s despite the existence of national and international organizations dedicated to its promotion. The rationalization movement, which was already beginning to falter by the end of the 1920s, was effectively silenced during the Depression era as Americanization no longer appeared the path to follow. Some in Europe were completely disenchanted with the whole scientific movement. Thus, Ernst Poensgen, iron and steel industrialist and head of the German Steel Association, stated in exasperation to a colleague in 1931 [quoted in Nolan, 1994, p. 228]:

Don't mention science to me! We've been pumped full with science: scientific technology, scientific management, scientific market research, scientific accountancy, and so on and so on. And where has all this science brought us?

Despite the problem with rationalization as a broad social concept, not all industrialists were turned away from every aspect of scientific management. Many were happy to apply Taylor's ideas at the shop-floor level, as exemplified by the Europe-wide success of the Bedaux consultancy in selling its simplified version of Taylorism to businessmen desperate to cut costs as a means of ensuring survival [Kipping, 1999]. As Table 1 shows, the Bedaux consultancy was very successful in both France and Britain during the 1930s, but less so in Germany where its office was closed in 1933 following Hitler's rise to power, although it was allowed to re-open in 1937 under a different name.

In Italy in the 1930s, there was a backlash against scientific management generally and the Bedaux system in particular. As noted in Table 1, the adoption of the Bedaux system grew much more slowly in Italy than in any other country between 1931 and 1937. Although attempts to apply the system had been made

**TABLE 1**  
**The International Expansion of the**  
**Bedaux Consultancy during the 1930s**

Country	Office opened	Plants using the Bedaux system	
		1931	1937
United States	1916/18	52	500
British Isles	1926	30	225
Germany	1927	5	25
Italy	1927	21	49
France	1929	16	144

Source: Kipping [1999, p. 198]

since 1927, as in other countries, such attempts had met with strong resistance from workers. Concerns over wage reductions and intensification of work rhythms led to strike action on numerous occasions by the Fascist unions despite strikes being illegal in Italy at the time [Volpato, 1978, pp. 214-216]. Concerns over the nature of piecework agreements made under the Bedaux system led, on November 9, 1934, to a motion being adopted by the Central Corporation Committee (*Comitato Centrale delle Corporazioni*) requiring that every piecework agreement must have been collectively bargained (*contrattazione collettiva*). The passing of this motion has led Lavista [2003] to declare that Bedauxism (*Bedonismo*) had been abolished, while Kipping [1999, p. 200] has claimed that the Bedaux consultancy in Italy was banned by the State in 1936. The impact of the 1934 motion, however, was that, in early 1935 in those businesses which operated piecework systems, managements and unions were forced to renegotiate their agreements [Sapelli, 1978, pp. 235-236]. In practice, however, the new bonus-related schemes that emerged were merely variations of the previous Bedaux arrangements, most particularly because the Bedaux system found general ideological acceptance among Fascist industrialists [Fauri, 1999, p. 104]. Indeed, its emphasis on the human power factor, ignoring the type of machinery or working methods, meant that there was no need for any major investment by firms to assess standard outputs and bonus rates; that is, it was a “ready to use” system [Musso, 1987, p. 107]. Nevertheless, there were mixed feelings towards the new systems, varying from enthusiastic imitation to scornful refusal.

The growing politicization of the debate around scientific management in Italy in the 1930s, in particular the fact that the policy of high wages proposed by Taylor was considered politi-

cally unacceptable at this time, was reflected in *L'organizzazione scientifica del lavoro*. From 1934 on, the articles published in ENIOS's own organ indicate a shift in focus, referring merely to the introduction of new plant and machinery, the review acting as more of a marketing showcase for certain companies than as a device for fostering debate on specific topics. Fauri [1999, p. 113] also notes that, as in other countries within Europe in the 1930s, the American model of productivity lost its catalytic inspiration as autarchy and protectionism prevailed.

### SOURCE MATERIALS

The study of Ansaldo which is conducted in the next two sections of the paper is based on archival material and published secondary sources. The source of the archival material is the Ansaldo archive (*Archivio Storico Ansaldo*, hereafter ASA, located in Genoa) which was opened in 1980 and contains all of the surviving records of the company over a period of 150 years. Over the last 25 years, the Ansaldo archives have been extensively examined by economic and business historians,<sup>2</sup> resulting in the publication of a number of major studies of various aspects of the company's history, particularly works by Rugafiori [1981, 1992], Doria [1989], and Falchero [1990]. Nevertheless, until now, no management or accounting historian has yet examined the company's records for evidence of links between accounting change and scientific management developments during the interwar period.

Although the survival of cost accounting records for Ansaldo has not been as great as one might have hoped, it is possible from those extant and other documentary sources, especially records deposited by various top managers from the study period, to piece together key aspects of the cost system and how it changed over time. As with many such historical studies, it is not always possible to provide precise details of the use made of the cost information generated. However, the relationship between changes in managerial approach and accounting is clearly observable from the surviving archival records, supported by secondary literature.

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<sup>2</sup>Bigatti [1998, p. 121] has indicated that the Ansaldo archive, the functions of which now extend far beyond records maintenance, has become an important center for Italian business history research.

## ANSALDO: ACCOUNTING AND MANAGEMENT DEVELOPMENTS, 1918-1933

*Overview:* World War I saw massive growth at Ansaldo as the company continued to pursue its policy of vertical integration which had begun to take shape before hostilities commenced. Numerous acquisitions resulted in the capital of the company rising from 30 million lira in 1914 to 500 million in 1918 and employment growing from 10,432 in 1914 to 47,163 in 1917 (see Table 2). By the end of the war the company comprised, among other things, steel foundries and factories, shipbuilding yards, various mechanical engineering departments, lignite mines in Tuscany, the Cogne iron ore mines, and an electricity generating company, Impianti Elettrici Valdostani [Falchero, 1986].

**TABLE 2**  
**Key Statistics, Ansaldo during World War I**

	1914	1915	1916	1917	1918
Stated capital (lira)	30,000,000	30,000,000	45,000,000	100,000,000	500,000,000
Investments (lira)		20,002,444	68,015,772	126,571,621	373,765,510
Employment	10,432	18,322	33,908	47,163	30,397
Airplane production (no.)		63	126	768	2,064
Airplane engines production (no.)				203	389
Production of steel (tons)	19,176	26,415	31,341	40,275	52,631

Source: ASA SSNB 532/7

The expansion of Ansaldo reflected a twin desire on the part of the company's owners, Mario and Pio Perrone, to make the company less reliant on external suppliers, whether Italian or foreign, while simultaneously satisfying their thirst for an industrial, economic, and political power base. This latter desire was reflected in the Perrone family's various other activities, most notably the acquisition of a number of newspapers and the establishment of the Banca Italiana di Sconto in 1914 [Falchero, 1990; Galli della Loggia, 1970].<sup>3</sup> With this development, Ansaldo became one of the major Italian industrial-financial complexes of the time although remaining heavily reliant on the Italian State as before World War I.

<sup>3</sup> According to Falchero [1983], Italian nationalism provided the basis for the establishment of the Banca Italiana di Sconto, its main purpose being to undermine the influence of the "German Bank" (*Banca Commerciale*) in key sectors of the Italian economy.

Indeed, the war brought Ansaldo even closer to the Italian State with production, which increased dramatically (see Table 2), becoming increasingly focused on war materials, including airplanes. Not surprisingly, Ansaldo's turnover and profits grew during the war, although this would subsequently lead to accusations of profiteering and consequent legal action by the State once the war ended [Falchero, 1990]. The ending of hostilities created additional problems for the firm, not the least of which was a concern over payment for job orders in progress and how to convert production back to peacetime requirements. While Ansaldo subsequently received payment for job orders in progress, the amount was somewhat lower than the value of the work completed, compounding the problem of falling revenues consequent upon the economic problems of the immediate post-war years.

Financial problems coincided with recognition that there was a major need for investment and restructuring to stem growing labor costs. During the war, the emphasis within Ansaldo had been on securing production at all costs; little by way of any rationalization of production processes had occurred. During 1918-1919, efforts were undertaken in this direction by the Perrone brothers, but it proved to be too little, too late. Cash flow problems; a lack of financial support from the Banca Italiana di Sconto, which itself failed in the early 1920s; the loss of political support from the Nitti government; legal problems in respect of war profiteering; and difficulties with the workforce during the period which became known as the "red biennium,"<sup>4</sup> pushed Ansaldo into a major crisis. In 1921, Ansaldo recorded a loss of just over 180 million lira (see Table 3) and found itself in major financial difficulties. As a result, at the beginning of 1922, the Perrone family was forced out and ownership of the business passed to a branch of the Bank of Italy. A new company was formed with capital of 200 million lira, divided between the Banca Nazionale di Credito, a member of the Credito Italiano group, one of the most powerful former opponents of the Perrone family, and the former Gio Ansaldo company [Rugafiori, 1978]. In 1925, Banca Nazionale di Credito became the sole owner of the concern.

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<sup>4</sup>The "red biennium" refers to a period immediately following World War I when there occurred a large number of strikes among the working classes throughout Italy. The term "red" is used to reflect the fact that the strikes are considered to have been inspired by communist ideology.

TABLE 3  
Ansaldo Profits and Losses (in lira), 1919-1940

Year	Profit/(Loss)	Year	Profit/(Loss)
1919	35,590,802	1930	6,664,075
1920	5,947,763	1931	153,177
1921	(180,884,987)	1932	119,045
1922	(331,027,455)	1933	(90,448.622)
1923	3,705,812	1934	1,243,024
1924	4,923,403	1935	(8,980,747)
1925	6,666,612	1936	316,736
1926	(15,958,823)	1937	552,332
1927	(24,981,193)	1938	1,494,869
1928	503,758	1939	9,925,557
1929	6,566,103	1940	14,459,835

Source: Vasta [1998, Table 9, p. 210; 1999, Table 8, p. 268].

On the change of ownership in 1922, the Perrones' strategy of vertical integration was reversed and virtually the entire managerial hierarchy was dismissed. Many factories and plants were closed or sold, resulting in employment falling to about 10,000 workers in 1922. Under the partial, and subsequently full, control of the bank, Ansaldo's financial position was stabilized but remained weak, with the company recording a mixture of small profits and losses through the 1920s (see Table 3). With the 1929 world slump, there was a further significant reduction in activity at Ansaldo [Degli Esposti, 1993], with employment falling from 13,400 in 1930 to 9,230 in 1932. The company once again recorded a major financial loss in 1933.

*Organizational Change and Scientific Management to 1933:* Before World War I, Ansaldo had suffered from organizational and managerial problems [Guagnini, 1997], both within its larger departments and with respect to a lack of coordination between departments. Directors of the company were sent to visit some of the most important firms in the engineering and steel sectors, such as Ford, Bethlehem Steel, Krupps, etc., in order to study new methods of (scientific) management, as yet largely unknown in Italy. However, with the emphasis of the company's production comprising one-off jobs or small batch production, these methods, more suited to mass production scenarios, failed to be implemented before the war [ASA, F. Puri 7/13].

During World War I, Ansaldo acquired plants located in Turin formerly operated by Fiat (Ansaldo San Giorgio) where, prior to the takeover, Fiat personnel had been engaged in the first experimental applications of Fordist methods in Italy [Volpato, 1995]. While these methods continued to be applied after the takeover, and despite being an improvement on the practices used at Ansaldo's departments in Genoa, no attempt was made to apply them to the company's other factories before the end of the war [ASA, AP SNB, 128/24]. Nevertheless, a new system of labor organization involving greater standardization, the division of productive processes, the employment of non-qualified labor, and the general introduction of piecework was implemented at Ansaldo during the war [Molinari, 1997]. However, as Dewerpe [1985] has argued, the piecework systems introduced at this time were *ad hoc*, the piece rates being determined in a non-scientific manner. Even so, there is evidence of support for major reorganization among some sections of the company's management during 1918-1921, including the application of Fordism to improve efficiency and reduce production costs [ASA, AP, SSNB 128/24]. The strength of such support, however, proved insufficient to affect an unfreezing of the status quo, not the least because the company's board remained unconvinced of the potential benefits of the proposed changes. The Perrone brothers, in particular, took the view that the company's diverse range of products, the widespread geographical spread of its factories, the distance from suppliers, and the fluctuating nature of demand presented obstacles to the application of these new techniques [ASA, AP SSNB 128/24; ASA, F. Puri, 7/13].

The forced departure of the Perrones and much of their top management team in 1922 clearly presented a scenario in which change could occur since a number of existing barriers to change were removed. However, little change was effected for several reasons. First, the managers appointed to replace those of the former era were largely from a military or political background<sup>5</sup> and had little by way of business skills or knowledge

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<sup>5</sup>An example of the chief executive officers during the period following the Perrone era is Colonel Ugo Cavallero, who was in charge at Ansaldo from 1928-1933. Born in 1880, he was a captain in the Italian Royal Army during World War I and chief of the Italian Army delegation at Versailles in 1919. Between 1920 and 1925, having left the army, he managed some Italian firms. From 1925 to 1928, as a close friend of Benito Mussolini, he was appointed Minister of War (the Italian Army was reorganized under his control), Senator of the Reign, Count, and Major-General of the Italian Royal Army.

of new managerial structures and techniques. Second, the key managerial emphasis for many years after 1922 was merely to avoid bankruptcy. Third, there was the company's relationship with the State, which was a major customer. Under Mussolini, the nature and power of the Italian State developed greatly and this, together with the increasing likelihood of the State taking a major stake in or even control of the company, militated against the development of a stable and powerful system of governance within the firm. Commenting on the productive organization of the company during the war and immediately after, Sarli, manager of Elettrotecnico from 1925, considered the company very weak and uncoordinated [Gibelli, 1998].

Nevertheless, despite such strong forces militating against any change, local managerial initiatives can be noted at Ansaldo during the second half of the 1920s. At the Third International Congress on Scientific Management, held in Rome in September 1927, for example, Mario Fossati presented a paper entitled, *L'organisation scientifique du travail dans les mines et les usines electrosiderurgique Ansaldo Cogne Aosta*, in which he described the application of new management techniques inspired by Taylorism at the Cogne complex of iron ore mines and steel factories where he was director. Although the main focus of the paper is the introduction of new plant and equipment, including a new railway, new elevators, and electric furnaces, Fossati [1927, pp. 8-9] reports that significant increases in productivity and efficiency had been achieved as a result of the managerial and technical changes implemented. That this was not an isolated example is made clear by Pellegrini [1929] in his description of organizational changes inspired by Taylor's scientific management at the Ansaldo Lorenz telephone factory at Cornigliano from 1926. Such local initiatives in respect to the utilization of scientific management within Ansaldo once again emphasize the possibility of limited change occurring within parts of the business, but also suggest that the forces acting against change within the organization as a whole were stronger, resulting in only a partial unfreezing of existing methods.

A similar occurrence took place in the late 1920s and early 1930s at the company's electro-technical department where an attempt was made to implement the Bedaux system. A document dated April 14, 1930, written by the "director/vice-director" of Elettrotecnico, notes that, "in the electro-technical factory, by means of a 'manufacturing time and analysis office,' we are strongly pursuing the reduction of labor costs using the Bedaux method, which we began to adopt experimentally last summer"



[ASA FSB 24/26 f.1]. With this development, Ansaldo shows itself to have been in the forefront of such developments within Italy,<sup>6</sup> although there is no evidence that the Bedaux system was introduced more widely within the company at this time. Once again, this development seems to have represented a partial unfreezing at a local level which failed to generate permanent change throughout the organization.

*Cost Accounting and Management Control:* Throughout the troubled times from 1918 to the early/mid-1930s, there was one notable change to the cost system utilized at Ansaldo. At the beginning of the 20th century, the company operated an historical cost system in which the costs of job orders were linked to the financial accounting system [see, for example, ASA AP SSN 33/1]. Within the cost system, overheads were allocated to departments largely on the basis of pre-determined percentages, partly reflecting the size of departments as measured by the amount of capital invested in them. In 1912 [ASA AP SSB 963/17], changes to the 1904 accounting rules, suggested by Ricci, a member of Ansaldo's *collegio sindacale*,<sup>7</sup> included the charging of a part of overheads on the basis of direct costs. Further moves were made in this direction with the issuance of a new set of accounting rules in 1921 [ASA FSB 27/2].

Dewerpe [1985] has suggested that budgets were being used at Ansaldo by 1914, but he seems to have been referring to statements drawn up monthly by each production department entitled, "Estimates of purchased materials, planned and actual expenses and invoices" [ASA AP SSR 559/1]. The basis on which these statements were drawn up is far from clear, but taken together with the large variances shown when aggregated for all departments and the lack of explanation for such variances (see Table 4) suggests that they did not constitute a serious attempt at budgeting. However, other surviving documents, particularly the monthly "*Preventivi di spesa*" (budgeted expenses) for various periods up to 1935, do provide comparisons of planned and actual expenditure [see, e.g., ASA AP SSR 558/2].

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<sup>6</sup> Molinari [1999] incorrectly puts the first application of the Bedaux system as occurring at Ansaldo in 1940.

<sup>7</sup> At that time, the *collegio sindacale* comprised, with the board and the general meeting of the shareholders, one of three main organs within Italian companies. The *collegio sindacale* was responsible for ensuring that directors complied with legal requirements and that the bookkeeping was correct.

**TABLE 4****Variations between Actual and Planned Expenses, July 1916**

Planned expenses for all departments	L. 9,287,015.50
Actual expenses	L. 15,380,131.26
Variance	L. 6,093,115.76

Source: ASA AP SSR 559/1.

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Limited knowledge of cost systems at other Italian companies during the early decades of the 20th century makes it difficult to judge whether the one utilized at Ansaldo was advanced or not. There were limitations as recognized by Pio Perrone in a letter written to the directors on January 31, 1920: "in our company we are really far from knowing exactly the cost of our products in all their constituent elements" [ASA AP SSN 778/5]. A major deficiency of the Ansaldo cost system stemmed from the manner in which overheads were allocated. The allocation method utilized coefficients which failed to reflect the effective absorption of overheads [ASA AP SSN 513], the use of appropriate cost drivers being lacking. Furthermore, price setting was conducted merely on the basis of adding various percentages to direct costs to represent general expenses and "profit," a system which failed to reflect how production levels interfaced with costs.

Such concerns were clearly influenced by the perilous state of the company's financial position at the end of World War I. Thus, in 1919, the Perrone brothers established a General Inspectorate at Ansaldo in an attempt to increase efficiency. Accounting was part of the remit of the administrative arm of the Inspectorate, while among the duties of the technical arm were cost prevention, distribution of work, and the scientific organization of production. Although the General Inspectorate was disbanded in 1921, it did establish a new set of accounting rules. These differed from the earlier rules of 1904, modified in 1912, in an attempt to classify costs using cost drivers linked to the volume of productive activity.

The specific purpose behind this change was the attempt "to know the minimum price at which to accept orders at a loss...when orders are not sufficient to absorb all the productive capacity" [ASAFSB27/2, March 1921, f.6], a clear recognition of the importance of direct costs in determining whether to produce or not. A second important and novel feature of the

1921 rules was the classification of costs on three levels [ASA FSB27/2, ff. 4-5]:

1. overheads *tout court* (*spese generali*)
2. manufacturing costs (*spese di lavorazione*)
  - 2.1 direct manufacturing costs (*spese di lavorazione*)
  - 2.2 shop-floor overheads (*spese d'officina*)

The manufacturing costs were considered to be those costs which could be decreased in the case of a reduction of production. Direct manufacturing costs were those costs specifically allocated to job orders (generally, labor and raw materials). Shop-floor overheads, which were considered not to be “directly allocable to job orders,” were to “be debited to transitory accounts for statistical purposes, and then allocated to job orders, by means of hourly rates, actual or theoretical, or by means of other criteria, according to the situation; such criteria being established by the technical office, with the agreement of the administrative office” [ASAFSB27/2, f.5].<sup>8</sup> The second part of the 1921 rules comprises a list of the “overhead *tout court* accounts” and a list of the shop-floor overhead accounts.

Thus, while the Perrones may have acted as a barrier to the implementation of certain managerial changes within Ansaldo after World War I, in particular the introduction of Fordist methods, they did oversee the implementation of important changes in cost accounting. The increased emphasis on efficiency enshrined in the new accounting rules was to be a legacy which the Perrones were to leave for their successors upon which they were able to build. The unfreezing and change introduced by the Perrones became re-frozen by successive managements throughout the 1920s. Thus, from 1925, the production units were required to send reports to the central management on the “fundamental indexes of production and the economic trend of the production units.” Basic indicators contained in these reports were total cost of manufacturing labor, which was considered an index of manufacturing intensity [ASA FSB 24/52]; job-order portfolio; monthly expenses for personnel and auxiliary manpower; the ratios between total general expenses and the total labor costs, both direct and auxiliary, considered as indicators of the use of productive capacity; profit or loss on completed job orders, with an explanation given for each loss;

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<sup>8</sup>The ideas underlying these developments clearly stemmed from the work of A.H. Church. According to Fasce [1993], the only translation of his book, *Production Factors in Cost Accounting and Works Management* into Italian (as *I fattori della produzione*), was carried out by the General Inspectorate of Ansaldo.

and the value of cash inflows and outflows.

Cost control in the 1920s therefore seems to have been directed towards efficiency, the emphasis oriented towards controlling and reducing the cost of direct factors. Following the experimental adoption of the Bedaux method in 1929, the exploitation of productive capacity was analyzed by means of a single indirect indicator, i.e., the ratio between the theoretical and actual working hours. While there is evidence of the introduction at this time of responsibility accounting, it was of an extremely limited kind, effected only at the level of departments and departmental directors, not within the departments themselves. Cost determination thus remained centered on the productive units with no reference to the analysis of individual or group performance, while variance analysis of budgeted expenses continued to be carried on in the same way as before [e.g., ASA FSB 24/24, ASA FSB 24/17].

#### ANSALDO: ACCOUNTING AND MANAGEMENT DEVELOPMENTS, 1933-1940

*Overview:* During the 1920s and early 1930s, Ansaldo had suffered from weak market forces, the Wall Street crash, the inadequacy of its organizational and productive structures, and the interference of politicians [Rugafiori, 1978]. As a result, in 1933, a year in which the company exhibited a major loss of almost 100 million lira after years of negligible profits (see Table 3), Ansaldo found itself one of the first companies to be taken under the wing of the State's new industrial holding arm, the IRI. Founded in 1933 by the technocrat Alberto Beneduce, the IRI took over the industrial securities held by those "mixed banks," such as the Banca Commerciale Italiana and Credito Italiano, which had fallen into a deep financial crisis [Amatori and Bigatti, 2003, p. 224]. Beneduce designed a structure in which firms under State ownership operated in a market environment rather than as a nationalized monopoly. Initially designed as a temporary measure, the IRI was declared a permanent institution in 1937 [Ciocca and Toniolo, 1994, p. 585]. The IRI takeover of Ansaldo guaranteed the survival of the firm, which became a central plank in the rearmament policy of the Fascist government. Indeed, in 1936, the Italian State accounted for 85% of Ansaldo's turnover [Rugafiori, 1999, p. 89].

*The IRI, Agostino Rocca, and the Implementation of Scientific Management:* On July 7, 1933, Mario Barenghi, formerly president of Ansaldo, became its chief executive officer (CEO) but, in

1935, he was replaced by Agostino Rocca. With a military and engineering background,<sup>9</sup> Rocca had gained business experience during the 1920s and early 1930s through his close links with Banca Commerciale Italiana,<sup>10</sup> one of the most important “mixed banks” of the time. After joining the Fascist party in 1923, Rocca became increasingly interested in scientific management<sup>11</sup> and a member of ENIOS in 1929. He became closely associated with the IRI upon its formation and was appointed in 1933 the general manager of Dalmine, an iron company where he had been employed as an engineer in August 1922. In 1935, he became general manager not only of Ansaldo but also of Siac. From 1938 to 1940, Rocca was also general manager of Finsider, the organization which controlled the iron industry holdings of the IRI.

When Rocca took over the reins at Ansaldo in 1935, the business was in a poor shape. Profits were non-existent, the plant and machinery were outdated, the organizational structure was old-fashioned and confused, enterprise was lacking, and the implementation of modern managerial techniques had long been delayed. There was little coordination between the various parts of the business. Production remained artisan-based with the engineer as the “shop-floor hero,” solving day-to-day problems as they arose. In order to effect the changes in organizational structure and culture which he saw as necessary, Rocca had to remove as many of the existing barriers to such change as possible while simultaneously enhancing

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<sup>9</sup>Rocca attended a military high school and the Reale Accademia di Torino. After serving as an officer in the Italian Army from May 1915 to December 1919, he graduated from the Politecnico di Milano, as an electrical/industrial engineer in May 1921.

<sup>10</sup>Links with Banca Commerciale Italiana began in 1921 when Rocca married Maria Queirazza, daughter of one of the bank’s managers. In 1926, Giuseppe Toeplitz, general manager of the Banca Commerciale, appointed Rocca as administrative inspector of many important Italian companies, such as Mira Lanza, a factory producing detergents, where he supposedly implemented a cost accounting system based on those used in the U.S. [Rugafiori, 1999, p. 81]. Details of this system are unfortunately unknown. In 1929, Rocca became an employee of the technical-industrial office of the Banca Commerciale where he worked as an inspector and/or consultant for the companies controlled by the bank. From 1930, he participated in Sofinid, an operation established by the Banca Commerciale in that year to oversee the bank’s portfolio of industrial companies, which included important concerns such as Terni, Sip, and Italgas. Sofinid attempted to sell off parts of the portfolio to other investors [Rugafiori, 1984].

<sup>11</sup>In the early 1920s, Rocca undertook various journeys throughout Europe and the U.S. during which he learned about scientific management.

the forces driving change. Thus, in an attempt to apply managerial ideas and concepts with which he was familiar, Rocca introduced managers from other firms, firing many foremen he identified as a barrier to the implementation of new ideas. Nevertheless, despite the support of these new managers and Ansaldo's position of power within a stable governance system (IRI as the sole shareholder and Fascism firmly established), Rocca faced stiff resistance to the implementation of new ideas at all levels within the company.

Following an in-depth analysis of the business, Rocca embarked on a program of restructuring and rationalization focused around a functionally based organizational structure in an attempt to generate major efficiency gains at the factories [ASA F.SB 3/7c]. One of the first developments and one which was to play an important role in these early changes was the creation in August 1935 of the *Organizzazione nuovi impianti*, the central office for the organization of new plants (ONI). Under Enrico Vandone, one of the most active members of ENIOS who had been brought by Rocca from Fiat, ONI was charged with establishing a new organizational structure. In particular, ONI promoted studies and elaborated programs incorporating Taylorist methods. While these helped to improve efficiency, they also served to increase the bureaucratic structure of the company's organization and its information needs [ASA F.SB 25/48]. Furthermore, Vandone's methods did not meet with universal approval as they were considered too complex and bureaucratic. Opposition from managers hostile to the application of scientific management principles first forced him to be moved from the ONI to the position of director of the mechanical department and ultimately in 1940 to be fired for excessive authoritarianism [Molinari, 1999].

It was under the auspices of ONI that the first systematic attempt was made to introduce piecework systems throughout Ansaldo. Thus, a document dated October 15, 1937 notes a continuing concern within Ansaldo over the organization of labor on the shop-floor, together with resistance to new systems from within the ranks of management [ASA FSB 24/46]. In it, Sarli [ASA FSB 24/46], the director of the elettrotecnico department, refers to "systems of technical-bureaucratic elaboration and the preparation of manufactures":

these systems are constituted by a complex of specific 'modules' – whose conformation (which should be as appropriate as possible) has a very big influence on the validity of the systems – and related compilation rules.

These systems are something which cannot be – and which have never been – created suddenly by someone but which have to be the result of an evolution coming from the experience of a specific department over the years.... Substituting, within a specific department, a new system to the one currently in use is like trying to substitute, within a population, the existing language with a new, rationally created one... It has to be noted that the nature of production (in particular mass- and non-mass production) has a great influence on the nature of the system.... We classify: SYSTEM A, the system which was in use in these departments until 18 months ago; SYSTEM B, the system introduced by ONI 18 months ago and gradually applied; SYSTEM C, the system we wish to propose as definitive.

Sarli was highly critical of system B, noting that under it, the technical staff, despite an increase in number from 35 to 57, had been unable to perform the functions that it had carried out 18 months before with fewer personnel. This, together with the increased difficulty in organizing production programs, led Sarli to advocate a move to the new arrangement, system C.<sup>12</sup>

In 1939, Rocca decided to move from a centralized, functional structure for the company to a divisional organization with each manufacturing department controlling its own marketing, production, and capital budgeting. Planning, however, remained a centralized function with managerial control partially implemented through target setting, budgeted expenses, and the allocation of investment funds, although we have found no evidence of the use of ROI at Ansaldo at this time. The new organizational structure was set out in Rocca's CIRCOLARE A.D. N. 66 [ASA FSB 3/7], dated January 5, 1940, and the accompanying organizational chart [ASA FSB 3/7C]. At the top of the managerial hierarchy was to be a general director; a directors' committee comprising the CEO (Rocca), the general director, and all departmental directors; and a departmental committee, comprising the general director and the managers of each department. The management of the departments was under the charge of the directors, while central management was in charge of inspection, administration, and other staffing functions, such as the building and plant repair section, the operations management section, the commercial section, the administrative section, the personnel section, and the general secretary's office.

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<sup>12</sup> Unfortunately, precise details of the various systems are not provided.

*The Development of Management Accounting during the Rocca Period:* Although an engineer, Rocca had a clear understanding of both financial and management accounting, which he had developed abroad [Rugafiori, 1984; Lussana, 1996]. When appointed general manager, he made a first attempt at implementing scientific management techniques across the business and instituted a responsibility accounting system [ASA D. SB 3/7 C]. Initially, while the business was organized on a functional basis, direct (productive) and indirect (non-productive and auxiliary) cost centers were created. Cost accounting was conducted within each production unit by a separate COI (cost accounting) office responsible for recording materials, purchase and sales invoices, and cost accounting. The various COI offices were coordinated by the *Direzione servizi amministrativi* (management administration service).

During the late 1930s and early 1940s, Rocca established many accounting and costing norms which not only influenced the method adopted but reflected changes in the managerial structure of the business. On the more technical accounting side, Norm 62000 of January 16, 1936, for example, stated that the closing cost balances were to be debited only with direct costs (material, direct labor, and expenses). All other cost elements were to be considered indirect and part of general expenses which, for each department, were to be allocated on the basis of direct labor, the percentage being calculated for each department using established rules. Only auxiliary services (e.g., power, water, steam, transportation, etc.) were to be allocated on the basis of consumption, actual or theoretical [Avalone, 2002]. Norm 000631, dated October 11, 1938, classified direct labor as the cost for the laborers who manufactured the product, while auxiliary labor comprised the cost for services, such as repairing, building equipment, plant transformation, etc. Together, direct and auxiliary labor were considered productive labor, while unproductive labor, such as cleaning, foremen, machine preparers, etc., was not directly related to production. Norm 640000 of July 3, 1936, meanwhile, demonstrates the links between cost and financial accounting at Ansaldo. Inventories were determined in the same way by the COI for all productive units and credited to account COI/10 (inventory) and debited to COI/30 (direct job order expenses).

Under Rocca's various norms, responsibility for the planning, production scheduling, and overhead cost control was divided between headquarters staff and the various COI. An internal audit office was established in July 1937. Industrial



accounting remained within the productive units. Norm 63003 of October 1939 defined the basic duties of each COI office as the bookkeeping for and the control of (1) the movement of material, (2) direct costs, (3) labor cost, (4) overheads for every cost pool, (5) product cost, and (6) monthly data for financial accounting purposes. Each COI was also required to provide the general and departmental management with reports through which they could control activities. Such reports covered the expenses of individual departments, offices, and services, and the cost of each product. Further, they should offer judgments regarding actual and estimated figures. Under CIRCOLARE A.D. N. 66 [ASA FSB 3/7], dated January 5, 1940, industrial accounting remained the responsibility of departments subject to checking, audit, and approval by the company's central management.

#### SUMMARY AND CONCLUSION

Conditions within most Italian firms during the 1920s were not especially conducive to the implementation of scientific management. Despite the formation of ENIOS in 1926, many elements of Taylorism were either anathema to Italian industrialists or impossible to implement in Italian firms due to political and socio-cultural factors which influenced the customs and traditions that pervaded Italian industry. Not the least of these was the rise of Fascism immediately after a long period of social hardship, class struggles, and strong reaction by entrepreneurs to the problems resulting from the labor troubles of the "red biennium." Another contributing factor was the lack of managerialism in Italian businesses, partly reflecting a high concentration of family ownership. The lack of a strong, dynamic engineering profession or an entrepreneurial culture, as well as heavy reliance on the State by firms, meant that scientific management innovations lacked the fertile soil within Italy in which to establish themselves between the wars. Nevertheless, companies such as Fiat, Magneti Marelli, Cantiere Navale Triestino, Officine Meccaniche di Novara, Olivetti, Manifatture Cotoniere Meridionali, Manifattura pellami e calzature, Perugia, and Cirio did begin to adopt some scientific management practices in the 1920s and early 1930s [Volpato, 1978, pp. 192-193]. Our case study firm, Ansaldo, a leading player in the iron and steel, engineering, and shipbuilding sectors in Italy in the early decades of the 20th century, also shows evidence of piecemeal experimentation with scientific management before 1930,

antecedent to embracing it more whole-heartedly in the second half of the 1930s.

Events such as the implementation of Taylorite techniques at the Cogne iron mines about 1927 and the Bedaux system at the electro-technical factory in 1929/1930, however, represented simply local management initiatives that did not spread more widely. Widespread adoption of scientific management only occurred when an individual in a key management position, Rocca as chief executive, was convinced of the potential benefits. Even so, the changes introduced by Rocca represented the implementation of a narrow version of scientific management, focusing on the rationalization of production techniques and procedures. In this, however, Ansaldo was little different from many companies throughout the world in both Europe and America [Hoxie, 1920], which often selected only those parts of Taylorism which they thought useful while rejecting or pushing aside other, less palatable, more contentious, or potentially more disruptive aspects [see, Smith and Boyns, 2005 on Britain].

To be successful in this narrow implementation, however, Rocca had to address the problem of significant barriers to change enshrined with the existing organizational structure of the company and the incumbent management culture. Deliberate steps were taken to reduce the barriers to change (e.g., existing foremen), while simultaneously enhancing the driving forces for change (e.g., bringing in outside managers well-versed in the ideas of scientific management). Despite this, the process was by no means a smooth one. Vandone, for example, was brought in as an important driver of change, but his methods on occasion served only to reinforce resistance, resulting in his removal from the center of events and eventual dismissal from the company altogether. Nevertheless, the organization which spearheaded the implementation of the new methods and which he had helped establish, the ONI, continued to be an important driving force even after his removal.

While aspects of scientific management were gradually adopted at Ansaldo throughout the interwar period, there is also evidence of changes in cost accounting identified in two periods – 1919-1922 and post-1935. In the first, a key role was played by the owners of the business, the Perrone brothers. Although the Perrones acted as a barrier to the introduction of Fordist methods at Ansaldo immediately after World War I, despite their knowledge of and interest in scientific management, they did represent a positive force in respect to cost accounting developments. The company's worsening financial plight in 1919

fueled a growing concern with efficiency, leading the Perrones to establish the General Inspectorate which introduced new costing rules in 1921 that focused on direct costs. Although the Perrones lost control of the company in 1922, the changes they set in motion proved beneficial to the firm's management during the 1920s. In the post-Perrone era, successive managements utilized costs for purposes of managerial control, contrary to the view of Benjamin Barabato et al. [1996] who have expressed the view that the lack of competition and closeness of many large businesses to the State militated against the use of costs for purposes of managerial control and efficiency in Italy between the wars.

The second significant episode of change in cost accounting, including the adoption of elements of responsibility accounting, coincided with the more widespread development of scientific management following the appointment of Rocca as chief executive. The clear link between these two developments from 1935 onwards supports the idea put forward by Boyns and Edwards [1997] that changes in cost/management accounting often occur as part of a symbiotic process of change within organizational structures and management systems rather than as part of a causal mechanism, as suggested by Chandler [1977, 1990] and Johnson and Kaplan [1987]. Perhaps it was the failure to implement scientific management in its widest sense which explains the lack of development of the Chandlerian M-form structure and the failure to adopt accounting techniques associated therewith, especially budgeting and standard costing. But, once again, in this respect during the interwar period, Ansaldo was no different from companies such as the Sperry Corporation in the U.S. [Fleischman and Marquette, 2003], Thyssens in Germany [Fear, 2005], Renault and Berliet in France [Moutet, 1992; Zimnovitch, 1997; Berland, 1999], or many firms in the British chemical and iron and steel industries [Edwards et al., 2002; Boyns et al., 2004].

If Ansaldo was not different from many other companies across the industrialized world, what lessons can we learn from it in relation to the issue of identifying the key factors which influence change in organizational structures and cost/management accounting? According to Lewin's theory, change can only occur when the forces promoting change outweigh those resisting it. This study has found that the balance of forces for and against change can ebb and flow over time, and that it is not necessarily the case that all changes will become permanent or widespread throughout an organization. While both internal

and external factors have been found significant in influencing change, the Ansaldo case emphasizes the importance of key individuals in effecting permanent change, especially in the area of cost accounting, therefore supporting the work of Granlund [2001]. From the perspective of Busco et al. [2007], the Perrones played an important role during the 1919-1921 period, while Rocca represented the key agency through which management accounting change was effected in the late 1930s. Both the Perrones and Rocca, however, carried out this role within a broader context, comprising a combination of institutional pressures, reflecting the socio-political and economic influences of the time. This study suggests that while accounting historians need to understand the contextualizing forces surrounding change, it might be more useful to focus more closely on the role of individuals in overcoming resistance to change and, thus, enabling it to take place.

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 ASA - Archivio Perrone - Serie scatole rosse (ASA AP SSR)  
 ASA - Archivio Perrone - Serie scatole numerazione blu (ASA AP SSB)  
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## EARLY BOOKS ON INVESTING AT THE DAWN OF MODERN BUSINESS IN AMERICA

*Abstract:* The purpose of this study is to enhance understanding of early investment practices and the role financial and other information played in those practices. The primary method employed is to examine early books on investing published in the U.S. Early authors described stock market operations including manipulations of security prices by the bulls and the bears. Their solution to this manipulation was to educate investors and provide company information, mostly through directories and manuals. This study shows that financial and other information was thought by the authors to be critically important at the time that the securities markets were first called upon to provide capital to the railroad industry, the first modern business in America.

### INTRODUCTION

Jim Cramer [2006] of CNBC's *Mad Money* advocates doing homework before purchasing a stock. This entails knowing how a company makes money; those factors that influence its sector; assessing its performance; checking out its competition, including evaluating earnings and growth; and analyzing its balance sheet and cash flow statement. Billionaire investor Warren Buffett's [2001] approach involves studying the prospects of a business, assessing the quality of its management, and purchasing its stock at a reasonable price. He is interested in easy to understand businesses that are very likely to have long-term earnings growth. Fama and French [1992] have found that factors other than beta from the capital asset pricing model are associated with stock returns [Sharpe, 1964; Lintner, 1965]. These factors are company size and book-to-market equity. In short, prudent investing requires information.

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While information is currently important to investors, was this always the case? And, if so, what type of information was considered useful? To help answer these questions, this study examines the role of information in early securities markets. In particular, it investigates the development of the financial markets for corporate securities in the U.S. and the attendant demand and supply of financial and other information for those markets.

The primary method of investigation entails examining the earliest books on investing published in the U.S. The time period covered ranges from 1848 through the 1860s, which, by no coincidence, corresponds with the rise of the railroad, the first modern business in America. The books examined portray the security markets, the need for information to make informed decisions, and the initial attempts to fulfill that need in a systematic way through directories and manuals. Those initial attempts to provide information are consistent with the Financial Accounting Standards Board's main rationale of financial reporting, namely providing information useful in investment and credit decisions [FASB, 1978]. By enhancing understanding of the development of investment practices and information needs, this study should lead to a greater appreciation of both the role and the evolution of financial reporting.

Two methods are used to identify books for this study. First, using WorldCat [2005], books are identified based on a fairly comprehensive list of search terms.<sup>1</sup> The search period ranges from the founding of Jamestown in 1607, the first permanent English settlement in the future U.S., through 1869, the closing date of this study. Second, also included in this study are the earliest railroad directories and manuals identified by Chandler [1956].<sup>2</sup>

Since the focus is on investment in corporate securities, the following additional criteria are used to identify a book for this

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<sup>1</sup>Terms include investments, investment, invests, invest, investor\*, common stocks, common stock, preferred stocks, preferred stock, joint stock, stocks, stock, bonds, bond, securities, financial statement\*, annual report\*, Wall Street, and speculat\* (as with search engines, the asterisk accounts for all forms of endings for a word). As such, this study extends backwards in time the work of Janson and Thompson [2003] who performed a similar search using investing, financial statement analysis, and security analysis. The earliest work identified in that study was Hume [1888].

<sup>2</sup>Some of these were not identified by the previously described search of WorldCat. A supplemental search of WorldCat using a variety of search terms involving "directory" and "manual" identified two additional relevant sources from the 1860s that are also included in this study.

study. First, the book must deal with investing in stocks or bonds of corporations; governmental securities are excluded. The book must address more than one corporation and not be limited to corporations in a single region (e.g., railroads in the Confederate States of America). Since the emphasis is on general investing practices, a book on a single corporation or a single region, which often appeared to be promotional, seemed of limited usefulness. Books focusing on the legal aspects of corporations or acts of legislatures, for which there were a fair number of hits, were omitted. While legal aspects undoubtedly play a role in the selection of securities, the emphasis here is on investing practices, taking the legal background as given although it does change over time. As noted, the book had to be published in the U.S. and concerned with American markets and companies. Though securities are certainly traded in other countries, the focus is on the U.S., which currently has the most extensive security exchanges in the world. It is the development of investment practices and the provision of financial information in that context that is of interest here. Corollaries are that the book had to be written in English, not be an Americanized version of a book initially published elsewhere (e.g., London), and be non-fiction. Finally, candidate books had to be available through interlibrary loan so that they could be reviewed.

Using these criteria, the earliest book identified is Armstrong [1848] and the first railroad directory/manual is Homans [1856]. Several other railroad directories/manuals are also examined in this study along with manuals from other sectors. This study terminates in the late 1860s with the inception of the most successful railroad manual, Poor [1968]. Poor's manual continued annually for 56 years through 1924.

This study is organized as follows. After the early development of the stock market is described in the next section, the nature of the securities markets and the demand for information is discussed. The subsequent section covers the supply of information which came primarily through railroad directories/manuals. The final section includes a summary and concluding remarks.

#### DEVELOPMENT OF THE NEW YORK STOCK MARKET TO THE 1860S

Although a stock market was first started in 1792, the New York Stock and Exchange Board was formerly organized in 1817 with the adoption of a constitution and a set of bylaws [Geisst, 2004]. This more formal organization was necessitated by an

increase in the number of securities following the War of 1812 [Eames, 1894]. To help with its formation, a representative was sent from New York to Philadelphia to inquire of the method of organization and workings of that city's more mature exchange [Financier Company, 1887].

Even after 1817, the number of securities traded on the New York exchange was still small, typically ranging from a daily volume of a few hundred shares in the 1820s to a few thousand in the early 1840s. Myers [1931] reported a daily peak of 8,700 shares in 1834, while only 14 shares were traded on a day in 1827. However, by the 1850s, weekly volume had increased to hundreds of thousands of shares [Chandler, 1977]. Remarkably, for the year ended June 30, 1865, the New York average daily dollar value of trades including gold transactions grew to \$20 million [Stedman and Easton, 1905].

Other than governmental securities, banks and insurance companies dominated the early New York exchange. In 1830, the listings contained 14 New York City banks, 31 New York insurance companies, and 11 miscellaneous companies (including the U.S. Bank) [Anonymous, 1861]. In August 1830, the Mohawk and Hudson Railroad was the first railroad to have its securities traded [Myers, 1931]. Railroad securities would increase in importance with the industry's rapid growth starting in the late 1840s. Track mileage in the U.S. went from 5,265 miles at the beginning of 1848 to 24,290 miles by 1857 [Train, 1857]. Mileage doubled to 48,860 miles by the end of 1869 [Lyles, 1870].

At the beginning of this period of rapid railroad growth, New York became the leading security market, surpassing Boston [Chandler, 1977].<sup>3</sup> The number of railroads with common stock on the New York exchange grew from 26 in 1848 to 39 in 1857, while even more striking, during the same period, the number of railroad bond issues traded went from four to 77 [Anonymous, 1861]. Nationwide, by the late 1860s, there were over 360 railroads with stock outstanding and over 700 bond issues [*American Railroad Journal*, 1869].

One of the most notable events for American stock markets in the first half of the 19th century was the Panic of 1837. Precipitated by the specie circular of that year and the distribution of surplus federal funds to the states, there was a severe contraction of bank loans, ultimately leading to a crash of security prices and, after a brief recovery and problems with American

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<sup>3</sup>Boston had briefly been the leading market, surpassing Philadelphia when the charter of the second Bank of the U.S. expired in 1836 [Chandler, 1977].

credit in England as well as declining cotton prices, to an economic depression from 1839 through 1843 [Govan, 1959; Garraty, 1995]. In brief, the specie circular required purchases of government lands to be paid for in coin rather than paper money. In addition, the U.S. government's return of surplus federal dollars to individual states also drained banks of their specie which was the basis of the currency in circulation. As a result, banks had to reduce their outstanding loans to correspond with their reduced specie reserves. Unfortunately, with the expiration of the charter of the second Bank of the U.S. in 1836, the U.S. lacked a central bank that might have been able to avert the crisis [Geisst, 2004]. One of the consequences of the panic and subsequent depression was that several states repudiated their debt obligations issued in conjunction with internal improvements, especially canals [Myers, 1931]. Consequently, it would not be until the late 1840s and early 1850s that foreign investors, a necessary supplier of capital for the U.S., would be tempted to make significant purchases of American securities [Chandler, 1977].

Another notable shock was the Panic of 1857. Precipitated by the default of the Ohio Life Insurance and Trust Company on August 24 of that year, security prices plummeted and banks had to suspend specie payments as they found that the value of the collateralized securities on their overextended loans proved inadequate [Medbery, 1870]. The economic conditions of the time were also affected by a decline in wheat prices as Russia entered the market after the Crimean War, railroad shipments declined, unemployment increased, and banks experienced runs [Garraty, 1995]. The economy recovered quickly but after rebounding somewhat, railroad security prices fell again in the Panic of 1860 due to the approach of the Civil War [Anonymous, 1861; Medbery, 1870; Stedman and Easton, 1905; Garraty, 1995]. However, spurred by war production, increases in gold prices, government issuance of paper money (greenbacks), and merchants speculating, railroad stock prices would improve dramatically during the Civil War [Medbery, 1870; Stedman and Easton, 1905]. Speculation was rampant as security prices changed, leaving Hamon [1865, p. 142] to conclude that "Paper money brought every one into Wall Street..."<sup>4</sup>

With respect to raising capital, during the first half of the

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<sup>4</sup>Stock prices would fall in the "Morse Panic" of April 1864, when Secretary Chase sold gold bullion, thereby reducing the supply of greenbacks. Another panic occurred on "Black Friday," September 24, 1869, as a consequence of an attempt to corner the gold market [Stedman and Easton, 1905].

19th century, most businesses such as textile mills and iron firms did not need capital from outside their regions [Chandler, 1977]. Moreover, corporations were slow in supplanting the partnerships of colonial times; those that did were generally self-financing [Myers, 1931]. However, conditions changed in the late 1840s with the rise of the railroads as the first modern businesses in America as professional managers, rather than owners, started to operate them. Unlike canals that were mostly publicly financed, railroads were predominately privately financed through corporate stocks and bonds. Significant capital was required of the security markets; investment in railroad securities from the late 1840s to the late 1850s would jump from about \$400 million to \$1.1 billion [Chandler, 1977]. It was on the eve of the expansion that the first book on investing in the U.S. was published.

#### THE STOCK MARKET AND THE DEMAND FOR INVESTMENT INFORMATION

In this first book, Armstrong [1848, preface] explained the workings of the stock market at this time to his readers as well as to warn of its pitfalls. He believed that his was the first such work: "...hitherto there have been no means of an uninitiated person to acquire such knowledge, as might be necessary for an operator, except from experience, which is generally a dear schoolmaster."<sup>5</sup> After defining some basic terms, Armstrong embarked on describing price changes or "fluctuations." Importantly, he noted that, "The market price of Securities is principally determined by their intrinsic value, that is, the state of affairs of the Company which the Stocks represent, the amount of dividend which they pay, the state of interest, &c." (p. 6).<sup>6</sup> He added that also affecting the market price are general conditions and, particularly, the money market.

Armstrong classified price changes as natural and unnatu-

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<sup>5</sup>It is possible, of course, that earlier works touched upon investing, especially if only part of the book addressed stocks or bonds, but was not reflected in the bibliographic record in WorldCat. One such interesting case was authored by Noah Webster [1802] who, in an appendix, included capital and dividend information for banks and insurance companies. Yet, Webster was more concerned with the economic development of a young U.S. than investing opportunities. Similarly, in an early book on railroads and canals, Tanner [1840] focused upon physical characteristics of a highly desired transportation system rather than "pecuniary" concerns that he considered secondary.

<sup>6</sup>Armstrong referred to securities as having an "intrinsic value," one of the fundamental tenets of Graham and Dodd [1934], published 86 years later.



ral. He continued that, while "...Government and State Stocks and Securities, which are valuable for investment, are, comparatively speaking, but slightly affected by the latter...Strange as it may seem, the greater part of the transactions on the Exchange are those relating to a class of *in*-securities, called Fancy Stocks" (p. 7). Armstrong noted that it is the bulls and bears that operate in fancy stocks or stocks of corporations that have essentially failed, hence incapable of paying dividends. However, "Their [sic] real worth, or rather worthlessness, is so little known, that it seldom interferes with an unlimited expansion or contraction in prices, as according as the wealth or talent employed on either side may preponderate" (p. 13). Armstrong commented that, "The more worthless and uncertain in value any Stock may be, it is proportionately a favorite among Stock Gamblers" (p. 30). Henry Varnum Poor, editor of the *American Railroad Journal* (*ARJ*), expressed similar sentiments [*ARJ*, 1851a, p. 6]: "The favorite foot-balls in the stock market are those whose value is *problematical*...So long as its capacities remain a matter of conjecture anything may be predicated of it."

This lack of information sustained a gaming environment, especially through margin buying at 5% of par and time operations that allowed the purchase/sale of stock with delivery and payment at a future date. A time buyer (seller) contract is where the buyer (seller) has the right to demand (make) delivery of a set number of shares of a security at an agreed price with one day's notice up to the term of the contract, typically three, 30, or 60 days, at which point delivery would be made if not demanded by the buyer or made earlier by the seller.<sup>7</sup> Armstrong disparaged time operations as betting.<sup>8</sup>

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<sup>7</sup>As further evidence that Armstrong's work was one of the first on the stock market, *Hunt's Merchants' Magazine* [1849a, p. 670], a business periodical of the time, also described time and stock market operations, noting that the article "...contains some information that will be new to many readers of the *Merchants' Magazine*..." Similarly, *The Bankers' Magazine and Statistical Register* [1851] reprinted an article explaining what stock brokers do, including what are "bulls" and "bears."

<sup>8</sup>Time operations would dominate transactions until the call loan market developed sufficiently in support of margin purchases in the late 1850s [Myers, 1931]. Nevertheless, time operations would continue on Wall Street [Medbery, 1870]. Today, time operations have essentially been replaced by margin buying and short sales. It is worth noting that the initial margin requirement is currently 50% of market value, a far cry from the 5% of par value, usually \$100, in Armstrong's time. The initial margin requirement is now set by the Board of Governors of the Federal Reserve System and has ranged from 40 to 100% since 1934 [Sharpe, 1981].

Armstrong returned to this gambling idea in several places in his manuscript. In discussing the actions of the bulls and bears, he added that, "...the excitement and infatuation which it induces is not surpassed by any description of gambling" (p. 16). He asserted that it is the excitement of gambling that leads to single speculations, against which he advised. It is not just material wealth, according to Armstrong, that the participants are pursuing. Instead, it is "...an almost irresistible infatuation, no less powerful than that which exercises such control over the votaries and victims of gambling hells. It has all the excitement and uncertainty of cards and dice, and is consequently as seductive and alluring" (p. 27).<sup>9</sup>

Others expressed similar conclusions as Armstrong's. *Hunt's Merchants' Magazine (HMM)* [1852b, p. 713] warned against speculation, noting "...that the promise of great gains at a small expense and risk, is always a deceit." The *New York Times (NYT)* [1858] also equated time operations as speculations and gambling and was skeptical that a legislative effort could prohibit them.<sup>10</sup> Freedley [1859, p. 33] stated that, "No business is in fact more uncertain or more certainly disastrous than stock speculating." Hamon [1865, pp. 141, 143] observed that when speculation "...has for its object securities imperfectly known, the income of which is a mystery, and the real value of which is a secret but to originators, it falls to the level of mere gambling, with all concomitant evils of swindling and sharpening." He added that few are successful, but that, "Men see the display of one... leading thousands of noble geniuses to sacrifice themselves in wild adventures, which terminate in cruel disappointment." Forty years after Armstrong's work was published, Hume [1888, pp. 120-121] also characterized the New York Stock Exchange essentially as a casino: "The Exchange, while having a share of

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<sup>9</sup>Apparently, temptation to speculate in the stock market was so strong that Sabine [1852] thought it necessary to warn new bank cashiers not to do it with the bank's money. Moreover, some of the early securities brokers had been lottery ticket salesmen before lotteries were largely outlawed in the U.S. [Redlich, 1951]. Perhaps, both they and many of their customers viewed a share of stock as more or less a lottery ticket.

<sup>10</sup>Poor did not like speculation because of its effect on security prices and the potential for leading to the demise of a railroad. Poor wrote: "Speculations in stocks is the worst form of gambling..." [ARJ, 1851b, p. 73] and felt that selling on time should be outlawed. On the other hand, not everyone at the time viewed "speculation" as necessarily bad. An article in *HMM* [1851b, p. 782] pointed out that merchants speculate when they buy goods on credit. It added that everyone speculates in that they "...are all endeavoring to acquire something of which they are not now in possession..."

legitimate business, is chiefly an immense gambling establishment." He added that, "Wall Street is a place where a few fortunes are made and a great many are lost."

What with the presence of "swindling and sharpening," it was not a fair game. The nature of time operations creates, according to Armstrong [1848, p. 12], conflicting interests where the bulls are trying to raise prices and the bears depress them. With the bulls and the bears acting in their self-interest, "...inevitable fluctuations are aggravated, and unnecessary or unnatural actions and reactions are produced by the various manoeuvres [sic] resorted to." The bulls tried to corner the bears by quietly purchasing a large number of shares and buying contracts, waiting for the rise in price as the bears, sellers on time, had to fulfill their contracts at higher prices given the scarcity of the securities.

Armstrong [1848, p. 17] warned that participants' actions "...are often characterized, not only by extreme acuteness and subtlety [sic], but also by the most infamous and remorseless treachery and duplicity." The participants often employed others in their cause to espouse or denigrate a stock, including bribing newspapermen. Along these lines, an article in the *NYT* [1856a] accused a broker, Jacob Little, who was "short," of enlisting the *Herald* to do his bidding by forecasting disaster in the stock market. On other occasions, the *Herald* "puffed" the value of other worthless stocks [*NYT*, 1856b, c]. A bull might have also tried to induce bears into selling by having an agent sell some of the bull's shares and leading the bears to believe that a decline was on the way. At the same time, the bull secretly authorized another agent to purchase the bull's and other shares offered in the market, thus recovering the shares initially sold and more besides. Street operations also provided the opportunity to deceive others through wash sales where two bears (or bulls) agreed to buy and sell a security below (above) its market price, giving the other brokers nearby the impression that the security's price was falling (rising). Armstrong also warned of unscrupulous brokers, who might be the counterparties of time purchase contracts, and, therefore, might manipulate their clients for their own advantage. Armstrong related an anecdote where a broker encouraged a client to hold on to his time purchase contract while the client was out of town, knowing the stock was due for a fall. The broker had sold the contract to the client. Cornering and wash sales were also described in an article reprinted in the *HMM* [1849b, p. 118] which commented that while brokers honored their contracts, "By common consent every stock broker is al-

lowed to lie as much as he pleases when making a bargain..."<sup>11</sup>

Given this state of affairs, Armstrong [1848, pp. 23, 28] was skeptical of achieving success in the stock market, concluding, "Therefore, the most rational mode of deciding, in our opinion, with regard to the expediency of being a Bull or a Bear, is to close one's eyes, toss up a penny, and abide by the result." Nevertheless, Armstrong provided some suggestions – not risking all one's resources on one security, obtaining contracts in writing, requiring deposits on contracts, and using trustworthy brokers. Most importantly, in his concluding remarks, Armstrong advised novice investors to "...invest only in securities of known value; for if this were the case, there would be fewer bubbles manufactured, and a smaller portion of the aristocracy would owe their *exalted* position to the ruin and heartrending misery of the hundreds of poor and credulous people whom they have entrapped with their damnable knaveries."<sup>12</sup> Hamon [1865, p. 142] gave similar advice: "Small capitalists should invest their funds in well-authenticated securities, but always for cash, for fear of being cornered and obliged to sell when their Stock declined..."

To this end, Armstrong [1848, p. 28] included an appendix that should have helped outsiders to carry out his advice. Here, Armstrong gave a brief description of ten fancy stocks: "...to give outside speculators generally an idea of what they are meddling with, as in nine cases out of ten, speculators know no more of the Stock they buy or sell than their names." His descriptions entailed a brief history, including financial troubles and such items as par value, recent market values, price ranges for the stock, any dividends paid, leading shareholders, debt burdens, and occasional comments on the management.<sup>13</sup> Hence, Armstrong believed that information should help outsiders in making rational decisions.

Others thought information was the key as well. Poor in *ARJ* [1849c, p. 581] urged state commissions to inspect a railroad and report related financial information when it opened a new section. The hope was that, "It will give a steady and uniform

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<sup>11</sup>Members of the stock exchange also honored their contracts. Through August 1865, only three members of the exchange had been expelled for dishonesty [*NYT*, 1865].

<sup>12</sup>Apparently, Armstrong had first hand experience with coming out on the losing end of the stock market given that he signed his title page as "A Reformed Stock Gambler."

<sup>13</sup>In the other two appendices, Armstrong provided brief descriptions of brokers and brokerage firms to help outsiders select them more wisely, as well as a listing of the members of the old and new boards of the stock exchange.

value to railway stocks, and preserve it against those violent fluctuations so often witnessed, and effectually put an end to the present enormous amount of gambling in railway stocks, by which so many are ruined, by putting it out of the power of designing and cunning men, to make dupes of the weak and inexperienced." Train [1857, p. 213] encouraged railroad stockholders to attend stockholder meetings in person and not to send proxies. He urged them to "Ask for the accounts; examine well the details, especially of the 'construction account'." Stow [1859] thought stockholders have no one to blame but themselves since they rarely kept track of directors' actions. Thus, Poor, Train, and Stow, in addition to Armstrong, each thought that accounting and other information could help investors improve their understanding of railroads and investment decisions.

#### THE SUPPLY OF INVESTMENT INFORMATION

As noted, Armstrong and others thought that one of the solutions for the stock market was to provide information so that outsiders would know what they were buying. This was one of the motivations for ensuing railroad and other sector directories or manuals. Poor [1860, preface], in his initial attempt at a manual, concluded in consideration of obtaining the needed information:

What is wanted, consequently, is a work which shall embody within convenient compass a statement of the organization and condition of all our companies and at the same time present a history of their operations from year to year; which would necessarily reflect the character of their management, the extent and value of their traffic, and supply abundant illustrations, with which to compare similar enterprises that might be made the subject of investigation and inquiry.

*Annual Reports and Periodicals:* It should be noted that some companies did provide annual reports to shareholders. For example, railroads in Massachusetts and New York were required to do so in the 1840s [Chandler, 1956], and New York's general incorporation law of 1848 required annual reports of paid-in capital and debt [Baskin and Miranti, 1997]. The Baltimore and Ohio Railroad provided reports from its inception in 1827 [Previts and Samson, 2000]. Examples of reports from the 1840s include those of the Utica and Schenectady and the South Carolina railroads [Previts and Merino, 1998].

Periodicals of the time also provided some information. For example, *HMM* devoted a section to “Railroad, Canal, and Steamboat Statistics,” which included sporadic summaries of annual reports of railroads. These typically reported abbreviated earnings, dividend, operating, and fare information. Sometimes balance sheet information was provided. A few of the entries were extensive, such as for the Camden and Amboy Railroad and the Raritan Canal [*HMM*, 1848] that included details of the cost of the road, monthly receipts and expenditures for 1832-1847, and passenger and freight information. All in all, for 1848, information for about two dozen railroads was provided. Longer articles also occasionally appeared, such as “Massachusetts Railroads” [Balfour, 1848], which contained a table showing breakdowns of receipts and expenses, net income, percent of net income to the cost of the railroad, passenger and freight miles, and some ratios, such as net income per mile run, for 18 railroads. But, overall, the information was neither consistently provided from year to year nor very comprehensive. By the end of 1849, *HMM* also included a section entitled “Commercial Chronicle and Review,” discussing the money market, banking, imports/exports, and general comments on the stock market.

*HMM* [1852a] began to provide in tabular form annual operating and financial information for railroads in Massachusetts.<sup>14</sup> The financial information included the following data: cost of railroad; receipts, broken down by passengers, merchandise, and mails; expenses, broken down by road bed, motive power, and miscellaneous; net income; and net income as a percentage of cost. Receipts, expenses, and net income were also calculated per mile run. Similarly, a table first appeared in *HMM* in 1854 for Connecticut railroads. The financial data included capital, capital paid-in, cost of road, gross earnings, working expenses, net earnings, dividends, debt, surplus, and calculations of various costs and earnings per mile run. However, such tables were the exception rather than the rule.<sup>15</sup>

Although less extensive than *HMM*, the *Bankers' Magazine and State Financial Register (BM)* [1848, 1850b] also provided some information. Monthly closing prices for selected stocks for

<sup>14</sup>The table replaced textual information provided the previous two years [*HMM*, 1850, 1851a]. With the notable exceptions of dividends and interest, the tabular form contained more financial information.

<sup>15</sup>Tables sometimes were included for other industries. For example, *HMM* [1853] presented a table showing balance sheet information for banks in Pennsylvania. As for railroads, *Hunt's* included bank information, often capital and dividends, on a sporadic basis.

1847 were given in 1848 and, subsequently, in 1850, a monthly exhibit of the ranges of stock prices was given. Elsewhere, Boston bank statistics were provided infrequently, including capital and dividends [*BM*, 1846], and occasional write-ups on railroads, such as for the Boston and Worcester, showing breakdowns of receipts and expenses for 1842-1849 [*BM*, 1850a]. It also had a section, "Notes on the Money Market," devoted to the money market that contained mostly general statements about the stock market.

The *NYT* also had a stock and money market column, initially entitled "Commercial and Money Affairs," that reported stock transactions; made comments on specific companies including revenue, net earnings, and dividends; and discussed the money market, such as commercial paper and bills of exchange. It also had sections in a classified ad format, entitled "Financial," where company financial results and notices of security availabilities were posted, and "Dividends" for dividend announcements.

Like the other periodicals examined, *ARJ* provided sporadic reports on railroads in 1848, including a few that were quite detailed, showing balance sheets, earnings information, and operating results. These reports increased once Poor became editor at the beginning of 1849. However, many of these were brief, mentioning earnings information, prospects, acts of state legislatures, etc., and were often excerpts of articles published elsewhere.

Similar to the other periodicals, at the beginning of 1851, Poor started a column entitled "The Stock and Money Market." In his column, Poor related the money market more directly to railroad shares than the other periodicals and included selected stock prices for both Boston and New York. In addition to covering such topics as the availability of money, imports/exports, tariffs, and specie payments, he discussed and editorialized on the prospects for different railroads, including the advisability of issuing securities.

Like *HMM*, the *ARJ* [1849a, 1850] provided tables of information on the railroads in several states. However, more interesting were the systematic attempts by the *ARJ* to provide tables of data on all of America's railroads. In conjunction with its initial attempt to appeal to stockholders [*ARJ*, 1844], the journal [*ARJ*, 1845] started providing tables with its first issue the next year. Initially, an updated table appeared weekly, but later more sporadically, with the final table published on May 2, 1846. Subsequent attempts with tables recommenced the next year [*ARJ*,

1847, 1849b, 1853], but it would not be until 1855 that the “Railway Share List” essentially appeared continuously. When revived [ARJ, 1855], it also included a list of “Railroad Bonds.” Also provided were the offered and asked prices of U.S. government, state, and city securities. These lists were consistently published on a weekly basis until spring 1859 [ARJ, 1859a, b].

After a hiatus, in fall 1859 Poor expanded the details of the “Railway Share List” and also increased the issues listed in the “American Bond List” [ARJ, 1859c]. Table 1 shows the type of data listed in the “Railway Share List.” However, not all this information was available for all railroads. The new bond list provided description, amount, interest rate, due date, and price. The number of bond issues with dollar amounts listed went from 77 in May 1859 to 435 in November [ARJ, 1859b, c]. In 1860, selected closing daily prices were first included on a consistent basis, and, in June, an expanded list of daily price data for the week for securities traded on the New York Stock Exchange was published along with the share and bond lists [ARJ, 1860].

**TABLE 1**  
**“RAILWAY SHARE LIST” DATA**

Basic descriptors – name and year  
 Length – main track, branch, second, and in-progress track  
 Rolling stock – number of engines and cars by type (passenger and other)  
 Balance sheet amounts – railroad, rolling stock, investment in foreign works,  
     capital paid-in, bonded and mortgage debt, floating debt, and totals  
 Transportation results – mileage operated and miles run by trains  
 Other financial data – gross and net earnings, dividend rate, and price of shares

Source: ARJ [1859c]

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Updated versions of these lists were consistently published through the 1860s. By the end of 1869, additional tables were published [ARJ, 1869]. The first, “Railroad and Canal Dividend Statement,” showed stock outstanding, dividend months, and date of last dividend payable. “Railroad Earnings-Monthly” contained information for selected railroads. Also included was an expanded list of “National and State Securities,” a list for “City Passenger Railroad Share and Bond Lists,” and a list of “Preferred & Guaranteed Stocks.” In addition to the daily prices for the week for securities traded on the New York Stock Exchange, prices from the Philadelphia, Baltimore, Boston, and London (American securities) exchanges were published. As for the older



tables, the "American Railroad Bond List" was expanded to include when and where interest was payable. The information for the "Railroad Share List" was also slightly expanded to include B.M.E. cars (baggage, mail, and express), land, &c., accounts, as well as cash, liability accounts, surplus income, and number of passengers and tons of freight carried one mile. These tables that started out as a modest undertaking came to fill a majority of the *ARJ*'s pages. For example, these weekly tables comprised 16 of the 26 pages (exclusive of advertising) of the December 25, 1869 issue.

Yet, providing information on railroads via a periodical was apparently too limiting, necessitating a different medium. A single row of data in a table is inherently constraining. Moreover, Poor himself was involved in developing a more comprehensive mechanism for providing information. He was motivated to help fill the void in annual reports that then existed. Poor [1860, preface] explained that the void was due to the fact that relatively few states required annual reports, and that where it was required, "...it is often neglected, no penalty being suffered thereby." He added that "Reports that are full and explicit are accessible only to a small number of parties interested."

*The First Railroad Directories and Manuals:* As noted, the first railroad directory in the U.S. is Homan's *The United States Railroad Directory, for 1856*. Though it proclaimed on the title page "To Be Continued Annually," this was the only edition that Homans, editor of the *BM*, produced [Chandler, 1956]. Homans [1856, p. iii] claimed that "...such a compilation...had never before been attempted."

His basic entry for a railroad included name, route (termini), length, location of office, and lists of officers, directors, and conductors. Some of the entries contained brief notes commenting on the leasing or operation of a railroad by others, stage of construction, important connecting lines, etc. There was no financial information in the basic entries and only a few financial items were provided in an appendix for the railroads in three states. However, in his introduction, Homans stated that in subsequent editions he would like to include chartered and paid-in capital, details of cost of construction and average cost per mile, funded and floating debt, interest rate, and payment dates and places. Note, however, that earnings information was lacking in his list of additional information.

Homans was the first to start a railroad directory. Not only did others include the information that he provided in his basic

entries, but they also included the information that he suggested would be useful, although unable to publish it himself. Thus, Homans began the journey and pointed the way for others to follow.

The next contribution, started in 1858 and continuing annually through 1865, was originally authored by James F. Low and Josiah J. Burgess. Low and Burgess were partners in a railroad supply house [Chandler, 1956], and their directory was presumably a means for vendors and manufacturers to contact railroad officials. Nevertheless, financial information was included. The earliest volume that could be obtained for this study is that for 1864 when Low was publishing the volume by himself. The extended portion of the title read [Low, 1864]: “containing an official list of all the Officers and Directors of the Railroads in the United States & Canada, together with their financial condition, &c., &c.”<sup>16</sup>

A typical entry for a railroad included name, route, length, branches, location of office, time of election, and names and cities for the officers and directors. The financial information entailed paid-in capital, funded debt, total cost of road, gross and net earnings for the previous year, and dividend rate. Hence, Low was providing basic financial information on capital structure, assets, earnings, and dividends.

It should be noted that some of the entries contained less information. Also included were the number of locomotives and various types of cars (e.g., passenger, first and second class, freight, service, gravel, and baggage). The gauge of the road was reported.<sup>17</sup> Low mentioned that a few railroads were leased or operated by others. Overall, Low’s emphasis appeared to be the route, equipment, officers, and directors. More importantly, however, after 30 years of railroad development in the U.S., Low (and Burgess) began the process of providing basic financial information in a directory.<sup>18</sup>

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<sup>16</sup>Earlier editions, at least back to 1859, also contained the phrase “with their financial condition” in their titles [Chandler, 1956]. Hence, Low and Burgess were acknowledging the importance of financial considerations by the late 1850s.

<sup>17</sup>As will be seen, other authors included operating information as well. The inclusion of non-financial operating data in financial reporting was one of the suggestions by the Special Committee on Financial Reporting [AICPA, 1994].

<sup>18</sup>Two other directories were very similar to Low’s. One, Keeling [1866], appears to be the successor to Low’s directory. Apparently, this was the only volume. The other, Ashcroft [1862], was published from 1862 through 1870. *King’s Railway Directory* by A. H. King, published 1867-1870, could not be obtained for this study.

Frederick Stow [1859] went well beyond Low and Burgess in not only providing more detailed financial information, but analyzing it as well. After introductory sections on the railroad industry and estimated earnings available to stockholders for 1859, the main part of the text began. Table 2 shows the basic entry for a railroad. Note that as early as 1859, Stow was calculating profit margins and various returns on investment. Overall, Stow provided the following items: (1) detailed balance sheet and income account information; (2) comparative income data; (3) ratio analyses; and (4) monthly earnings.

**TABLE 2**

**Contents of a Basic Entry in Stow [1859]**

Basic descriptors and personnel – name, office location, directors, and officers
Termini and length – main track and branches
Connections – with other railroads or steamships
General comments – touching on purpose (e.g., coal shipment), important connections, history, prospects, construction progress
Financial comments – touching on overall financial condition, financing, debt, and dividends
Financial statements – balance sheet with notes and an income account
<i>For 1857 and 1858:</i>
Comparative data – gross earnings, operating expenses, and net earnings
Percentages (ratios) – net earnings to gross receipts, to cost of road, to stock and debt, and to common stock after deducting interest on debt
Other earnings data – net earnings per mile of road and monthly earnings

Source: Stow [1859]

Unfortunately, Stow was unable to obtain in many cases either balance sheet or earnings information. From his descriptions, he provided what information he could obtain from recent annual reports, old annual reports, or reports to legislatures or railroad commissions. Stow sometimes expressed cynicism and concern about the lack of information.

Stow had several supplementary sections to his book, including a listing of railroad bonds by maturity date, noting the amount outstanding and interest rates. Next was a listing of railroads that were paying dividends with dividend rates and percentages of net earnings to paid-in capital. Following was a tabulation of “Railways in Good Credit,” or companies that paid their interest when due, and a list of “Delinquent Railway Companies,” indicating which issues were in default. Thus, Stow was also providing data on the credit worthiness of the railroads.

This is truly a remarkable book. Not only did Stow believe in the importance of financial statements, he analyzed them. He demonstrated understanding both of comparative income statements and several financial percentages or ratios. As he noted himself, the difficulty that he faced entailed getting the information from the railroads. Once obtained, though, he provided a thorough analysis. Coupled with his obvious knowledge of railroads and what made them successful, the book was clearly a pioneering effort on investing in the U.S. Unfortunately, no subsequent editions were produced. Though living in New York for much of the 1850s, Stow was a founding banker of a southern banking house that was closed during the Civil War [*National Cyclopaedia*, 1907].

Henry Varnum Poor's [1860] book, though lacking in financial ratios for the individual railroads, rivaled Stow's in the amount of balance sheet and income data provided and surpassed Stow's in providing comparative earnings data over the years since the inception of the railroad and in presenting details regarding features of each bond issue. Poor's work covered the railroads and canals in New England and the Middle Atlantic states. Intended to be the first of three volumes and supplemented by annual updates, Poor never published the remaining two volumes due to the Civil War [Johnson and Malone, 1935].

The book was divided into 11 chapters, one for each of the covered states. Each chapter began with a "Preliminary Memoir," detailing by year the opening of railroads in that state and including a table listing each railroad, its share capital, funded debt, and total indebtedness. Poor classified the share capital and total indebtedness as being "productive" (dividend or interest paying) or "unproductive."

Most of the book was devoted to providing the individual write-ups for the railroads. The extent of the write-up depended upon the amount of information that Poor could obtain and whether the railroad was still in existence. Table 3 shows the type of data in a "full" entry. Note that Poor included annual information for selected data including earnings and dividends since the inception of a railroad. Several of the railroad entries were briefer while some were more detailed, especially the longer railroads.

All in all, Poor's contribution was amazing in the details provided and the obvious pains-taking effort on his part. From the basic entry, a reader can obtain information on capital structure, interest and dividend payments, status and special features of bond issues, and earnings, not only for the current year but

**TABLE 3**  
**Contents of a “Full” Entry in Poor [1860]**

Basic descriptors and personnel – name, fiscal year, board of directors, and officers

Termini and length – main track, branches, second track, sidings, and turnouts

Rolling stock - numbers of locomotives and different types of cars (e.g., passenger, baggage, freight, and gravel)

History – dates (charter, construction, and opening), changes in authorized capital, expansions, leases, consolidations, and joint operating agreements

Share capital – authorized and paid-in

Funded debt – payment dates, where payable, if in default, and sometimes special features or purpose of issue

Other debt financing aspects – sinking funds and floating debt

Financial statements – income account for latest year, latest general ledger balance sheet, and details of cost of road and equipment

“Cost, Earnings, Expenses, Etc., Yearly” – a table showing, since inception, cost of road, mileage, earnings information (gross earnings by source, operating expenses, and net earnings), and dividend information (dollar and percentage).

Source: Poor [1860]

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since the beginning of operations. However, unlike Stow [1859], Poor did not provide percentage or ratio analyses for the individual railroads.<sup>19</sup> On the other hand, the reader can learn of the development of the railroads (and canals) in each of the covered states in Poor’s volume. Regrettably, Poor was unable to publish the remaining volumes for the other states.

*Other Manuals:* Manuals did exist for industries other than railroads.<sup>20</sup> The *Guide-Book for Investors in Petroleum Stocks* was published by the American News Co. [1865, p. 1]. The most helpful advice to investors was given in the initial section entitled “Investments in Petroleum Stocks.” The authors noted that investments in petroleum stocks had become widespread in that, “...the glowing pictures of suddenly-gained riches have aroused a speculative mania almost unprecedented in history.” On the other hand, “...it is equally true that this circumstance has given

<sup>19</sup>Poor did include ratios for state totals in his “Preliminary Memoirs.”

<sup>20</sup>Another interesting book of this period is *Notes on the New York Money Market, 1800 to 1860, Inclusive* [Anonymous, 1861]. Although no author is listed, the book is laid out in a similar format to the regional book of Martin [1856]. The book gave a year-by-year summary of money market events and rates for 1800 through 1860. Organized by industry, tables were included showing the highest and lowest prices for each year for each security traded on the New York Stock Exchange. However, the author’s focus was on the broader money market rather than just the stock market.

rise to a growth of fraudulent impositions and extravagant expectations." Therefore, "...it requires judgment and thorough investigation to sift the wheat of good companies from the chaff of mere bogus affairs..." As with Armstrong and others, the authors were concerned with manipulative and deceitful practices on Wall Street, and they prescribed information and judgment as the proper remedy.

The company information that should be obtained according to American News [1865, p. 2] included capital, "...the *real* value of its shares," working capital, location, relevant mining laws, resources, and the "...honesty and integrity of the managing men." After reproducing the mining laws of several states, about half of the book lists petroleum companies in various states. Most of these are under "New-York Petroleum Companies" which included 177 companies and for which the most information was provided. A typical company entry included amount of capital, number of shares, par or share value, subscription price, amount of working capital, location of property, company officers, and address of office. Thus, the authors advised investors to gather information so that they could make informed judgments about the stock of a petroleum company. In that respect, they provided some rudimentary information in their book. However, the information given was slight, considerably less than that provided in railroad manuals. In particular, no earnings or debt information was included, and the only dollar amount for an asset was for working capital.

A more general manual is Hamon [1865] who divided his book into two parts, the first dealing with exchanges and how they operate and the second providing information on particular securities. In Part I, Hamon discussed the history of exchanges, provided constitutions and bylaws of various New York exchanges, described stock jobbers whom he classified as bulls and bears, advised the use of brokers who did not trade on their own account, explained different types of transactions including time operations and buying on margin, and defined various terms including buyers' and sellers' options and cornering. In Part II of the text, Hamon [1865, p. 144] provided information about specific securities, governmental and corporate, and gold: "Our purpose is now to describe all those securities quoted at the Board, and to give all the information that may be required by those who desire to judge fully of the value of the stock upon which they would speculate." Similar to Armstrong's viewpoint, he added: "Speculation...ought never to bear on stock imperfectly known."

After discussing U.S. securities, state bonds, gold, and bank stocks (providing information on address, capital, circulation, officers, directors, dividend rate, dividend months, discount days, and market price), Hamon devoted the most space to the railroad industry. He included write-ups on 19 railroads and a table on others of significance. The first write-up was on the New York Central for which he gave its dividend history, location of the road, its distances, branch lines, number of locomotives, and number and types of cars. Also provided were the amounts of its capital, funded debt (no floating debt), and gross and net profit for 1864. Note that this financial accounting information paled in comparison to that provided by Stow [1859] or Poor [1860]. Hamon did present, however, in tabular form the earnings and expenses for each of the six months from October 1864 through March 1865 (the last month is estimated). The monthly stock price ranges were included for January 1860 through March 1865. The last table listed "New York Central Bonds," showing the issue, the amount, interest rate, months of interest payment, where payable (New York), year due, and market price.

For most of the other 18 railroads for which he provided write-ups, Hamon had a table with monthly price ranges of the stock and a bond table. Typically included were a description of the road, the area it served, important revenue sources (e.g., passengers, iron ore, coal, grains, milk), equipment, some earnings information, dividends, officers, and any other particulars he deemed important. In a table for 87 additional railroads, Hamon listed name, share capital paid in, dividend rate, sales (market price per share), and net earnings. Subsequent chapters covered other businesses including miscellaneous, mining, petroleum, and insurance companies. For miscellaneous companies, he typically gave information on their history, property, operations, directors, price of stock, and financial condition. In respect to the latter, the financial information ranged from a brief description of the capital stock to a run-down of the entire capital structure, some assets, and earnings. Only limited information was provided for mining, petroleum, and insurance companies with earnings, debt, and most asset information omitted.

Nevertheless, Hamon's purpose was to educate and present information to those interested in speculating in securities. He desired to reduce the "mystery" surrounding investments and elevate speculating above "mere gambling." Railroads had the most information, including in some instances earnings and capital structure. Comparative information and ratios were even presented in some cases. However, the information was

spotty and varied between companies, even among the railroads. Considerably less information was given for companies in other industries. Yet, he clearly believed in providing information so that investors could make informed decisions.

*Poor's Railroad Manual*: As noted, the longest enduring series began with Poor [1868]. Poor included in his manual other businesses besides steam railroads – about a dozen canals; tables for street (horse) railroads in New York, Massachusetts, and Pennsylvania; a couple of gravity railroads; one railway bridge company; the Pacific Mail Steamship Company; and Western Union Telegraph. A classified index of advertisers containing about 100 entries was provided.

There were over 750 items in his index, including U.S. and state debt, street railroads, and railroads known by more than one name. Most of the entries for typical railroads were short, being about one-third of a page to a page, while those for railroads leased and operated by another railroad or those under construction tended to be even briefer. The short entries usually included information only for the latest year. Table 4 shows the typical types of data provided. Some of the entries were slightly longer, including tables containing capital, debt, and earnings information for six years and other additional information such as a statement of cash flows of sorts.

**TABLE 4**

**Poor's Basic "Short" Entry**

Basic descriptors and personnel – name, directors, officers, and locations of principal and transfer offices  
 Termini and length – for main track and branches  
 Rolling stock – number of locomotives and cars by type  
 Operating results – miles trains ran, passengers and miles transported, tons of freight and miles moved  
 Financial results – gross earnings, operating expenses, net earnings, and sometimes interest and dividends  
 General balances – capital stock, funded debt, cost of road, rolling stock, material, cash

Source: Poor [1868]

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About 30 entries featured extensive write-ups for steam railroads. Information for these railroads could be quite detailed. Table 5 shows the type of data included for the New York Central, Poor's first entry. Perhaps in an attempt to fill the gap since



his 1860 book, Poor presented information for each of the previous six years, ending in 1867.

## TABLE 5

### Poor's New York Central Entry

Basic descriptors and personnel – brief history, fiscal year, annual meeting date, directors, officers, and principal office location  
Termini and length – main track, lateral and branch lines, second track, sidings, turnouts, and switches  
*Tables covering 1861-1867:*  
Physical descriptors – track length and number of locomotives and cars by type  
“Doings in Transportation” – miles run by train type, passengers and tons carried (total and for one mile), and financial results for passengers and freight per 100 miles (revenues, expenses, and profits)  
Operating profit information – gross earnings (by source), expenses (passenger and freight), and profits  
Financial statements (in considerable detail) – income account and general ledger balance sheet  
“Funded Debt” – outstanding dollar amount for each debt issue  
Stock prices – monthly ranges at New York

Source: Poor [1868]

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Overall, Poor provided basic operation and financial information of the railroads and other transportation companies of his time.<sup>21</sup> As described, some of his entries were very detailed. Compared with most of the manuals of his contemporaries, the notable exception was the then defunct manual authored by Stow [1859], the information was much more specific, especially with respect to details on both physical operations and financial results and conditions.<sup>22</sup> This information, along with his appendix on U.S. and state securities, should have helped investors to select securities more carefully, based on what Armstrong called “known intrinsic value.”

## SUMMARY AND CONCLUDING REMARKS

These are the earliest books on investing published in the U.S. that could be located. They show that at the time of the early development of modern business, information was a crucial concern to their authors. In general, the authors of the various

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<sup>21</sup> See Chandler [1956] for an analysis of Poor's *Manuals* in subsequent years.

<sup>22</sup> Less thorough than Poor's *Manual*, but more than Low's *Directory*, is Lyles [1869, 1870]

directories and manuals focused on capital structure, operating assets, earnings, and interest and dividend payments, along with the physical operations of the railroads. As time passed, more details were typically provided and went well beyond what could be presented in a periodical. Yet, the authors of the directories and manuals were often frustrated with the lack of and difficulty in obtaining information.

This study also shows that without adequate information, the securities markets were often at the mercy of manipulative practices. In fact, the first book identified, Armstrong [1848], focused on exposing the potentially deceitful practices of many of those in Wall Street and urged caution to outsiders tempted to invest in securities. In many cases as Armstrong and others warned, they were patronizing little more than a gambling hall, one that did not offer a fair game. More generally, Armstrong wanted to educate his readers on the mode of operation of the stock market, to explain the effect on security prices of what he called natural and unnatural influences, and to provide some information for a handful of companies that should be considered in making investment decisions. Although the information was slight, it was a start to providing information in book form that would soon be expanded by railroad and other manuals.

These manuals started in the form of directories, but quickly grew in sophistication, incorporating detailed comparative balance and income information and even ratio analyses. With their development interrupted by the Civil War, the manuals regressed somewhat in that a relatively few key financial items were included. This was the case until the inception of *Poor's Manual of the Railroads of the United States*, which began publication in 1868. However, like others, Poor could not obtain information for some railroads, and his information was spotty for others.<sup>23</sup>

In any event, financial accounting information mattered at the time that the security markets were first called upon to help fund modern business in America. Its use, along with company physical operating data and knowledge of general economic and money market conditions, could in the view of the contemporary

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<sup>23</sup> Standardized formats for the financial statements of railroads would not be required until 1887 by the Interstate Commerce Commission, and standardized accounting methods would not be required until 1906 by the Hepburn Act. And, although many corporations issued certified financial statements earlier, more general federal regulation of corporate financial reporting by the Securities and Exchange Commission would not follow until the 1930s [Baskin and Miranti, 1997].

authors help fight against the manipulative practices of the bulls and the bears. Then, as now, the availability of reliable information was critical to investors in making rational decisions.

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## THE MARKET FOR LUCA PACIOLI'S *SUMMA ARITHMETICA*

*Abstract:* This paper looks at an aspect of Luca Pacioli and his *Summa Arithmetica* that has not previously been explored in detail – the market for which he wrote the book. In order to do so, it follows a path identified by two clues in the bookkeeping treatise as to the nature of this market that modern eyes, unaware of how life was in late 15th century Italy, have missed. After discussing the curriculum taught in schools at that time, this paper considers a range of possible markets for which the book may have been written. The paper concludes that it was written primarily for, and sold mainly to, merchants who used the book as a reference text, as a source of pleasure from the mathematical puzzles it contained, and as an aid for the education of their sons.

### INTRODUCTION

Luca Pacioli's mathematics compendium, *Summa de Arithmetica, Geometria, Proportioni et Proportionalita* (SA), was first printed and published in Venice in 1494. It included a 27-page treatise on bookkeeping, *Particularis de Computis et Scripturis*. For many years, most accounting researchers have focused upon it, virtually to the exclusion of the remaining 588 pages of the book. To some extent, this is understandable. It is the only significant part of the book that has ever been translated into English<sup>1</sup>; it is the only part that is specifically about accounting;

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<sup>1</sup> Some of the introduction to SA has been translated into English by, for example, Taylor [1942]. The Index has been translated into English by Volmer [1994].

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it represents the first known printed treatise on bookkeeping; and it is widely believed to be the forerunner of modern bookkeeping practice [Fogo, 1905; Littleton, 1928; Langer, 1958; Macve, 1996]. Non-English-speaking accounting researchers have also not deviated from this research focus; the bookkeeping treatise has been translated into at least 13 other languages.

The first section of the book, on arithmetic, was translated or, more accurately, used as the basis for a book written in Spanish in 1514 by Andrés de Saragossa. The arithmetic and algebra sections of *SA* were the source of two-thirds of an anonymous Catalan manuscript containing 160 folios on algebra and commercial arithmetic dating from the early 16th century [Rey, 2006]. In general, however, researchers from other disciplines<sup>2</sup> have failed to publish translations of significant parts of the book.<sup>3</sup> What has been translated and published includes some of the mathematical problems by, for example, Jayawardene [1976] and Rankin [1992] and extracts of some of the mathematical content [e.g., Fauvel and Gray, 1987, pp. 249-252].

Many researchers have suggested that the bookkeeping treatise was sourced from a teaching manual circulating at the time in Venice [see, Peragallo, 1938, p. 74, fn. 16]. Despite all the efforts of the renowned Italian accounting researcher, Fabio Besta (1845-1922) and his students in the Venetian archives [see Vianello, 1896, p. 116], no handwritten text on accounting has ever been found that predates Pacioli's bookkeeping treatise other than a five-page overview of bookkeeping in a manuscript written in Naples in 1458 by Benedetto Cotrugli [Melis, 1950, p. 597; Tucci, 1990; Jouanique, 1996].

There are virtually no worked examples in the treatise, and many have suggested that this creates a lack of clarity in the explanations of the method described. It has also been implied or concluded that the treatise was inadequate for those wishing to teach themselves double-entry bookkeeping (DEB) [Geijsbeek, 1914; Hernández-Esteve, 1994a, b; Yamey, 1978, 1994a, b, 2004;

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<sup>2</sup>Non-accounting researchers have focused on different aspects of the book from those typically considered by accounting researchers, such as the range of mathematical puzzles it contains and their similarity to those contained in other texts; and explaining why different founts are to be found in different extant copies of *SA*.

<sup>3</sup>This is not to say that the remainder of the book was of little interest beyond the period of its publication. The second section, which is on algebra, was heavily cited by Renaissance algebraists in the years that followed its publication and is said to have been the enabling framework for the advances in algebra made in the 16th century [Rose, 1976, p. 145; Grendler, 2002, p. 427].



Nobes, 1995]. This conclusion appears entirely justified. Anyone using the bookkeeping treatise to learn how to do bookkeeping would need to have either been in business himself or, as suggested by Yamey [1978, p. 580], to have known someone he could ask for help in following it.

The lack of worked examples can itself be explained if Pacioli's source was a Venetian manual on bookkeeping. It is entirely conceivable that such a source might not have included worked examples as they could have been added by teachers when they went through the material with their students. Nevertheless, Pacioli was a renowned teacher who would have realized the benefits of including examples. Furthermore, he must have had some examples of his own that he could have used since he worked as a tutor to the sons of a Venetian merchant, was an assistant to that merchant for six years from 1464-1470, and was in business as a merchant in Naples for a few months in 1472 [Taylor, 1942, p. 170].

*The First Clue to the Identity of the Intended Market for SA:* The virtual absence of worked examples in the bookkeeping treatise must, therefore, have been the result of Pacioli believing that there was little benefit in incorporating examples within it, something apparently confirmed when he writes: "It is not possible to give here full examples for all these operations, but from those few that we give here you will be able to understand how to go ahead in other cases" [Pacioli, 1494, folio 203 recto, translated by Geijsbeek, 1914, p. 51].

This must have been, at least in part, because his intended audience for the treatise was merchants [see, Peragallo, 1938, p. 56]. This goes some way towards explaining the absence of worked examples. Even without them, merchants would have been able to understand and learn how to adopt the Venetian method of DEB as described by Pacioli. In addition, bookkeeping was one of the subjects taught in the Venetian *abbaco* schools attended by the sons of merchants [Grendler, 1989, p. 319]. As a result, for them and their merchant fathers, Pacioli's text would have been relatively easy to follow, but, surely, even merchants would have appreciated and benefited from the inclusion of worked examples in the bookkeeping treatise.

*The Second Clue to the Identity of the Intended Market for SA:* Even 50 years after the publication of SA, the fact that the intended readers were likely to have access to other material probably would not have resulted in the omission of worked

examples from the bookkeeping treatise but, in 1494, book publishing was very different and printers were still learning how to do things in the most efficient way. Even the printing of simple geometrical figures was a relatively new technique in 1494. Paper was expensive, half the cost of producing a book [Richardson, 1999, p. 26]. Including worked examples would have significantly increased the length of the bookkeeping treatise, perhaps by as much as 30% if modern texts are a guide. It would also have considerably increased the complexity, and therefore the cost, of the typesetting and required many costly wood blocks to be carved or metal plates to be cast. It is unlikely to have been an accident that the journal entries shown on the last page appear after all the text. For pragmatic economic reasons, if material was not considered essential in a printed book in the late 15th century, it was omitted. This observation is supported by Pacioli's own words: "For if we wanted to give you an example of all the ways in which merchants do business... this would make our treatise very long, which, on the contrary, I intend to make short" [Pacioli, 1494, folio 203 recto, translated by Geijsbeek, 1914, p. 51].

This reluctance to print unnecessary content raises another question, if nothing was included in books at that time that was not considered essential, why did Pacioli include a bookkeeping treatise for merchants in *SA*, a book on mathematics? Surely the last thing anyone interested in mathematics wanted to read was a treatise on bookkeeping. To modern eyes, this would almost certainly be the case, but was it also the case in 1494? Was there a group of people for whom the bookkeeping in *SA* was every bit as important as the rest? Could merchants, for whose benefit Pacioli explicitly included the bookkeeping treatise in *SA*, have been interested in a book on mathematics, or was it some other group altogether to which *SA* in its entirety was principally directed?

Yamey [2004, p.144] suggests that to comprehend the *SA* required the reader to possess a humanist education, which merchants typically did not, but he fails to justify that contention and then goes on to suggest that it was purchased by "mathematicians and other learned individuals rather than by merchants." Could this have been the case? Was there an alternative, more likely market for the book than mathematicians?

The remainder of this paper addresses these questions by seeking to identify the group for whom bookkeeping was of as much interest as mathematics. Far from being a strange choice of material to include in *SA*, the bookkeeping treatise was a vital

component that made *SA* a comprehensive reference book to its primary-intended readership.

It seeks to approach this issue from two directions. First, having established that bookkeeping was taught in some schools in Renaissance Italy, consideration is given to other subjects taught to whom in those schools and, in particular, whether the curriculum included mathematics of the type included in *SA*. Second, consideration is given to the content of *SA* in relation to the major occupations and groups who may have had an interest in at least some of its topics when published, including those suggested by Yamey [2004].

### MATHEMATICS AND SCHOOLING IN RENAISSANCE ITALY

The developments of mathematics and accounting were intertwined during the Renaissance. Mathematics was in the midst of a period of significant development in the late 15th century. Hindu-Arabic numerals and algebra were introduced to Europe from Arab mathematics at the end of the 10th century by the Benedictine monk Herbert d'Aurillac [Hernández-Esteve, 2006]. But it was only after Leonardo Pisano (Fibonacci) put commercial arithmetic, Hindu-Arabic numerals, and the rules of algebra together in his *liber abaci* in 1202 that Hindu-Arabic numerals became widely used in Italy.

Algebra did develop slowly over the following 300 years [Rankin, 1992]. Even in the late 15th century, the notations used when writing mathematical computations and algebraic equations were not standardized and were far more cumbersome than today. There were no signs for plus, minus, divide, multiply, or equals; no use of superscripts for powers; no root symbol; and no use of letters to denote parameters/variables in algebra. In *SA*, Pacioli introduced the symbols  $\tilde{P}$  (for piu, i.e. plus) and  $\tilde{M}$  (for meno, i.e. minus) for the first time in a printed book, symbols that became standard notation in Italian Renaissance mathematics. *SA* was also the first known book printed in Italy and written in the vernacular (i.e. the spoken language of the day) to contain algebra.<sup>4</sup>

The manner in which mathematics developed in Renaissance Italy owed much to the commercial revolution following the Crusades and the resulting expansion of trade and the establishment of a system of agencies distant from the center

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<sup>4</sup>For more information on the development of mathematics, see Rose [1976], Grendler [1989, 2002], and Rankin [1992].

of the business and long-term partnerships rather than one-off business ventures between two persons. Gras [1942, p. 28] describes this as the rise of the sedentary merchant: "...a merchant too wise, too occupied, too economical to travel. His distant connections were maintained by agents, traveling or resident.... The outstanding sedentary merchants were called merchant princes."

De Roover [1956, p. 115] suggests that three factors integral to the commercial revolution of the 13th century contributed most to the progress of accountancy – partnership, credit, and agency. Consequently, as described by De Roover [1942, p. 35], one necessary result of this commercial revolution of the 13th century was the need for more advanced systems of accounting:

One innovation of major importance was the current account kept in bilateral form, that is, the personal account divided vertically into two columns, one for the debit and one for the credit. Later, double-entry bookkeeping was introduced by adding impersonal accounts to the existing personal accounts. Good methods of bookkeeping were essential in order to keep accounts straight when two persons, residing in different cities, had numerous business dealings with each other. Merchants had to know where they stood, and accounting served as a guide by revealing profits and losses.

Apart from the development of DEB, this expansion of trade gave rise in Italy to the development of mathematics useful for merchants based on Fibonacci's *liber abaci* and called *abbaco*<sup>5</sup> which meant solving practical, business-related mathematical problems on paper [Grendler, 1989, p. 308]. This term had little to do with the word "abacus" used for a counting frame other than sharing a common etymological root [Van Egmond, 1981, p. 5], a position reinforced by Pacioli himself who wrote on folio 19 (recto and verso) of SA that he thought that "*abaco*" was either a corrupted form of "*modo arabico*" or a Greek word. The emergence of *abbaco* led, in turn, to the creation of a new type of mathematician, the *abachist*, and to the founding of a new form of school, the *abbaco* (or *abbacus*<sup>6</sup>) schools [see Rankin, 1979; Burnett, 2005; Blume et al., 2007].

<sup>5</sup>sometimes spelt, "*abaco*"

<sup>6</sup>Many writers use the term "abbacus" or "abacus" instead of "*abbaco*" when referring to these vernacular schools, presumably because the abacus was used in these schools when they first began to appear in 13th century Italy. Use of the abacus in the schools soon ceased, replaced by pen, paper, and ink used to write numbers in columns ("place-value numerals") [see Pin, 1993, p. 168; Burnet, 2005].

*Abachists*<sup>7</sup>: An *abachist* was a school teacher who taught boys<sup>8</sup> commercial mathematics and elementary accounting (always in the vernacular) [Grendler, 2002, p. 420]. The accounting was of two main types, *quaderno* (the ledger) and *far conti* (book-keeping). Pacioli's bookkeeping treatise is the first indication we have of how these topics, which were taught for many years before SA was published, were taught. [Grendler, 1989, p. 316] The majority of known *abachists* during the 14th and 15th centuries were Tuscan, mostly from Florence [Grendler, 1989, p. 308]. Domenico Manzoni,<sup>9</sup> the author of what is considered the first important book on DEB after Pacioli's bookkeeping treatise (on which it was directly based) [Peragallo, 1938, p. 60], first published in 1534, was an *abachist* [Grendler, 1989, p. 309].

Fibonacci's *liber abaci* formed the basis for hundreds of *abbaco* texts written by the *abachists* which were used in the private and municipal schools where the sons of merchants were taught [Allen, 2000]. These texts were more than simply textbooks; they were didactical supports for the teachers, that is, instructor manuals [Pin, 1993, pp. 169-170]. The oldest surviving example of these texts dates from the late 13th century.

*Schools in Renaissance Italy*: Trade and, therefore, merchants dominated Renaissance Italy, and one of the results of their dominance was the creation of private and municipal schools in which their sons and the sons of craftsmen were educated. All lessons were given in the vernacular [Grendler, 2002, p. 420] with a focus on the teaching of *abbaco*. The curriculum of the vernacular schools emerged from the merchant culture and was designed to prepare sons of merchants and craftsmen for their future working lives [Grendler, 1990]. There was another parallel set of schools, the Latin (either scholastic or humanist) schools, where the sons of the privileged were taught in Latin.

The two sets of schools taught very different subjects. The Latin schools sought to teach the future leaders of society and those that aided them, e.g., secretaries and lawyers [Grendler, 1989, p. 311]. They specialized in the trivium of grammar, rhetoric, and logic. *Abbaco* was never included "because it added nothing to the social status and goals of their students" [Grendler, 1989, p. 311]. On the rare occasions when mathe-

<sup>7</sup> sometimes spelt "*abacist*;" sometimes referred to as "abacus master"

<sup>8</sup>Very occasionally, girls were also taught by the *abachists*.

<sup>9</sup>Manzoni also published a self-teaching book in 1550 covering his vernacular school's entire primary and secondary level curricula [Grendler, 1989, p. 309].

matics was taught in these schools, it took the form of “classical or medieval Latin mathematics” [Grendler, 1989, p. 309]. In contrast to the vernacular schools, boys leaving the humanist schools often went to university.

Typically, the boys in the vernacular primary schools were aged between six and ten and were taught reading, writing, business correspondence, and notarial formulas. From 11, they moved to vernacular secondary schools, the *abbaco* schools, where they read books by the likes of Aesop and Dante and abridged vernacular versions of Fibonacci’s *liber abaci*.<sup>10</sup> Pin [1993, p. 168] and Grendler [2002, p. 420] provide lists of the topics they covered, including elementary accounting and how to solve business-related problems, such as interest calculation, loans discount, money exchange, partnership divisions, measurement, currencies, weights, and distance problems. “The mathematics employed combined arithmetic, [computing with numbers, especially decimals], algebra, geometry, and what might be called ingenious reasoning” [Grendler, 2002, p. 420].

They were also taught some basic Latin grammar at some point of their education, often at the vernacular primary school, sometimes after the *abbaco* teaching was completed, but the vast majority of the vernacular secondary school teaching was in commercial mathematics for merchants, focused on two main elements, geometry and arithmetic. At the core of the arithmetic was the study of proportion. The main rule taught in this area was the “rule of three,” a very simple method of finding an unknown from three known inter-related items still in use today [Baxandall, 1972, p. 94]. Boys in the vernacular schools learnt how to use the rule to solve problems involving many more variables by reducing such problems down to one involving three inter-related known items and one unknown.

An example of the rule of three is the following: if you want to know how much 500g of oats will cost when the price of 600g is \$3, you multiply \$3 by 500 and divide by 600 and get the answer, \$2.50. The rule of three was used for all manner of problems during the Renaissance, including discount, barter, and currency exchange. Virtually half the content of all known books on arithmetic of that era focused on this one rule [Baxan-

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<sup>10</sup>In some schools, different sequencing of topics was used. Some, for example, taught reading, writing, *abbaco*, and accounting to boys as young as six but, overall, the subjects studied across the vernacular schools were relatively similar. Accounting was taught more in the major commercial centers like Venice than elsewhere, and *abbaco* was not taught in a small number of the schools [see Grendler, 1989 for a detailed description of schooling in Renaissance Italy].

dall, 1972, p. 96]. In modern-day schooling, we learn the same technique through concepts such as distance equals speed times time and questions such as, if it takes one man a week to dig a ditch, how long would two men take to dig the same ditch?

As a result, all those educated in the vernacular schools were well-prepared for a career in commerce. They knew elementary accounting, how to read and write, and basic Latin grammar, which meant they could recognize, read, and understand some Latin. Although they would not have had sufficient fluency in Latin to attend university, they would not appear completely ignorant by comparison. They also had a good grounding in geometry, arithmetic, and proportions which, by virtue of their focus in the schools, was most relevant to merchants and customers of merchants as well as craftsmen such as artists, architects, engineers, and stonemasons.

Their knowledge of mathematics formed a major part of their set of personal skills. They used it daily, not just in their work. It was such a part of their overall knowledge that they joked about it, played games using it, bought books on it, and were extremely proud of their ability to apply it [Baxandall, 1972, p. 101].

### SUMMA ARITHMETICA

Luca Pacioli was not simply a friar and a university teacher; he was also an *abachist*. He taught *abbaco* and bookkeeping to the sons of a merchant, Rompiasi, in Venice for six years from 1464 [Grendler, 1989, p. 320]. Camerota [2006, p. 327] wrote:

Pacioli, one of the foremost abacus masters, was active not only in the abacus schools but also in the artists' workshops. Among his pupils were painters, architects and stonemasons, and the applications of Euclidean geometry are specifically identified by him as pertinent not only to the art of merchants and surveyors, but also to architecture, linear perspective, sculpture, wooden inlays, fortifications, the construction of machines and the arraying of armies.

Pacioli used the title "*Magister*" [Taylor, 1942, p.148], which indicated that he was a pre-university teacher<sup>11</sup> [Grendler, 1989, p.

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<sup>11</sup> Others, including Taylor [1942, p. 149], take Pacioli's use of the title "*Magister*" to mean he had been awarded a higher university degree between 1480 and 1486, during which period his name is completely absent from any extant university roll. It does seem that the *abachist* sense of the word is more plausible in this case.

25]. Pacioli, however, was a rarity in his day. Very few *abachists* were also university teachers; Grendler [1989, p. 28] could only identify two others. To have been appointed as the first chair in mathematics at two different universities [Taylor, 1942], his skill in geometry must have been exceptional.

In SA, Pacioli claimed that he made no original contribution to mathematics. He did, however, present new approaches to arriving at solutions to old problems [see, Rankin, 1992, p. 131]. He simply sought to incorporate within one book all extant knowledge on arithmetic, algebra, geometry, and, although it was not separately recognized at the time, trigonometry in a manner that provided lucid explanations of the subjects.<sup>12</sup> These were virtually all the topics taught in the vernacular *abbaco* schools, and they were included in SA in a didactic style, mirroring that in which they were taught in those schools.

In order to do so, he “based *Summa Arithmetica* on several manuscripts from the [*abbaco*] tradition” [Heefer, 2005, p. 16]. Field [1999, p. 301] states that, “*Summa*... was the first<sup>13</sup> printed treatise to deal with the kind of mathematics associated with the [vernacular *abbaco* schools].” Rowland [1995, p. 702] claims that “Pacioli’s *Summa de Arithmetica*... may be the most elegant and compendious of all vernacular manuals,” while Høyrup [2004, p. 2] writes that “it was...obvious to those...who did work on *abbaco* material that it belonged within a current leading from Fibonacci to Luca Pacioli,<sup>14</sup> Tartaglia and Cardano.” In other words, Pacioli picked-up what Fibonacci wrote and incorporated additions to date. Others then followed him.

As Maccagni and Giusti [1994, p. 18] wrote: “[SA] was an all encompassing work which summarised and rendered obsolete everything previously written about *abbaco*.” This is why it includes 150 pages devoted to matters directly related to commerce, including a treatise on DEB, material on barter, bills of exchange, weights and measures, and exchange rates. It is

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<sup>12</sup>Pacioli [1509b] was famed for his ability to provide clear explanations in both lectures and in his texts, for example, in relation to his translation of Euclid into Latin. A contemporary, Daniele Caetani of Cremona wrote, “Lucas Pacioli has penetrated between the Symplegades and into the many swirling Charybdis of error, the road has been made even, the passage safe, the route unencumbered through the dark byways, and the true Euclid has been brought back accessible to everyone. This has been done by the very skilful genius, the careful revision, and the unwavering judgement of our Master Lucas” [Taylor, 1942, p. 320].

<sup>13</sup>Field was incorrect as at least three others are known to have been printed in Italy earlier [Van Egmond, 1981], but it was certainly one of the first and certainly the most comprehensive.

<sup>14</sup>See, also, Franci and Rigatelli [1985].



why the bookkeeping treatise contains advice on how to write business letters. It is one of the reasons why it is written in the vernacular. It is likely to be why some of the factual details in the bookkeeping treatise were out-of-date in 1494,<sup>15</sup> especially if it was the bookkeeping manual that he himself used or wrote while tutoring the sons of Rompiasi 30 years earlier. It is also why, in several places throughout the rest of *SA*, Pacioli “makes detailed analysis of Venetian mercantile transactions” [Pera-gallo, 1938, p. 74, fn. 16, paraphrasing Pendorf, 1933].

*SA*’s identification as a *liber abaci*, an *abbaco* text, leaves little doubt that Pacioli wrote *SA*, at least in part, for merchants and for their sons, a point that will be developed more fully in the next section. However, it was also a true mathematical “*summa*,” a compendium of extant mathematical knowledge, and the first *abbaco* text to widen its audience beyond the merchant class [Jayawardene, 1973, p. 512] There were others who would have been interested in at least some of the content of *SA*, including those suggested by Yamey [2004]. Could their potential interest have meant that the primary intended market for *SA* was not the merchant class? Before considering this point further, it would be appropriate to examine first the actual content of *SA*.

*The Structure and Contents of SA*: At 615 pages, *SA* was a very large book, the equivalent of a 1,500 page textbook if typeset today [Pin, 1993, p. 165]. Its content clearly went beyond the level of the other *abbaco* texts, particularly the algebra. It was the complete technical manual for merchants and, for its day, contained the most comprehensive range of material available to meet their needs. After 16 introductory pages, the material in *SA* is presented in ten primary chapters, printed and separately paginated into two volumes:<sup>16</sup>

*Volume 1*

- 1 to 7 on arithmetic (222 pages)
- 8 on algebra (78 pages)
- 9 on business (150 pages) divided into 12 sections, the first ten on various items relevant to business (including barter and bills of exchange), the eleventh on bookkeeping (27 pages), and the twelfth on weights and measures and exchange rates

*Volume 2*

- 10 on geometry and trigonometry (151 pages)

<sup>15</sup> See, for example, Nobes [1995, p. 383].

<sup>16</sup> These paginations are taken from the 1494 edition.

Taking into account the overall content and sequencing of the material within it, the price at which it sold, the curricula of the schools and universities, the demographics of those attending them and working in them, and societal values of late 15th century Italy, various conclusions concerning the probable significance of possible markets for *SA* can be drawn.

#### POTENTIAL MARKETS FOR *SA*

*Students of Mathematics in Universities*: The initial impression to the modern eye is usually that *SA* was probably intended for use in universities. However, had Pacioli intended it primarily for that market, he would have concentrated on the geometry, trigonometry, and algebra. The business material would have constituted a separate volume, if included at all. Commercial arithmetic, the first seven chapters of *SA*, and business were not taught in universities at that time. Instead, the geometry and trigonometry were paginated separately from the rest of the book, clearly packaged as a separate volume, while the algebra is packaged with the commercial arithmetic and business material.

In addition, university teaching in late 15th century Italy was conducted in Latin, which was also the language of the textbooks used [Grendler, 1989]. *SA* is written in the vernacular with occasional phrases in Latin [see Lee, 1989; Marinoni, 1997, p. x; Field, 1999, p. 301]. Its selling price of 119 soldi [Dunlop, 1985, p. 153], just under 1 ducat, or about \$150 in today's terms, would also have reduced any possible demand from these students.

Finally, there were only a maximum of 5,400 students and less than 500 university faculty in all Italy in the late 15th century of whom no more than 26 were teaching mathematics [Grendler, 2002, pp. 415, 515]. Clearly, only a small number of the students were studying mathematics. Thus, despite how it appears to modern eyes, it is unlikely that students of mathematics in universities would have been considered a significant potential market for *SA*.<sup>17</sup>

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<sup>17</sup>An earlier manuscript written by Pacioli in 1477-1478 [see Vianello, 1896 and Cavazzoni, 1994 for a description of the manuscript] is thought by some accounting researchers to have been written for Pacioli's university students. One reviewer suggested that, if so, *SA* may also have been written for university students. However, this would contradict what is known about the language of university teaching, the language of the textbooks used, and the subjects taught at that time.

*University Teachers of Mathematics*: Yamey [2004] suggests that mathematicians, presumably both university teachers of mathematics and non-university mathematicians, would have been among the purchasers of the book. Let us examine university and non-university mathematicians in turn.

There were, on average, only one or two mathematicians per Italian university until the 17th century and only 13 universities in 1494 [Grendler, 2002, pp. 2, 415]. This maximum of 26 university mathematicians in Italy<sup>18</sup> would have had access to other sources for the same material in a form and style that better fitted their own humanist education and the need to teach in Latin, such as the 1482 printing of the Latin translation of Euclid's *Elements* by Campanus (1220-1296).

Even if the university teachers of mathematics preferred to have all the material they needed in one book, *SA* was not a book that they would have bought for its whole; they would not have been interested in the 150 pages on business which was not taught in universities. For the same reason, they would not have been very interested in the 222 pages on commercial arithmetic. "[They] taught (in Latin) mathematics, astronomy, and astrology...to men who would become physicians, philosophers, legists, and humanists" [Grendler, 2002, p. 420]. They would, therefore, have had little motivation to spend a week's salary on a copy of the book.<sup>19</sup>

Nevertheless, some of the more enlightened among them did purchase it or, at the very least, read it and used it in the development of their own books. Included was the renowned mathematician and physician, Girolamo Cardano of Milan [Rose, 1976, p. 146], though he had switched to become a professor of medicine long before doing so.

The market for *SA* to university teachers of mathematics would clearly not have been large enough to justify printing extra copies of the book for that market. Even if every one of them had purchased it, no more than 20 sales would have been generated. Given an estimate that as many as 2,000 copies of *SA* were printed in 1494 [Sangster, 2007], it was not a book primarily intended as a reference text or source of teaching material for university mathematicians.

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<sup>18</sup>If *SA* was intended for use in universities outside Italy, it would have been written in Latin rather than in the vernacular.

<sup>19</sup>The annual salary of a university teacher of mathematics in the late 15th century was between 40 and 60 ducats.

*Non-University Mathematicians:* Renowned mathematicians were not only to be found in universities in Renaissance Italy. Leaving aside most of the *abachists*, who were primarily teachers rather than theoretical mathematicians,<sup>20</sup> the foremost Renaissance mathematicians included Piero della Francesca, an artist and author of three scribal books on mathematics, including an *abbaco* text; Federico Commandino, a court mathematician and physician; Bernardino Baldi, a poet, court historian, abbot, architectural historian, orientalist, and polyglot (also the first biographer of Pacioli); Rafael Bombelli, an engineer and architect; Giovanni Battista Benedetti, a court mathematician; and Guidobaldo de Monte, a nobleman.

Many non-university mathematicians were educated in the vernacular schools and would therefore have had far more interest in and empathy for the contents of *SA* than university mathematicians who could not use most of it in their teaching. Yamey [2004] believes mathematicians would have been among the purchasers of *SA*. Indeed, some non-university mathematicians are known to have done so, including Leonardo da Vinci [Reti, 1968, p. 86, note 93] and Filippo Calandri [Dunlop, 1995, p. 152]. Others, including Commandino, Baldi, and Bombelli [Rose, 1976, pp. 146, 264], are all known to have read *SA* and, in the latter two cases at least, to have made use of it in writing books of their own. However, as with university teachers of mathematics, there simply were not enough non-university mathematicians to create a significant market for the book. *SA* would have been useful to them but was not written primarily for them.

*Abbaco School Teachers:* The *abachists* would have been able to use all the material in the book in their work. However, estimates suggest that there were only approximately 58 *abachists* in Venice around the time *SA* was published.<sup>21</sup> Clearly this was far more than the number of university teachers of mathemat-

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<sup>20</sup> A few of the *abachists* were mathematicians rather than simply teachers of mathematics. These included Niccolò Tartaglia, one of the foremost mathematicians of the 16th century.

<sup>21</sup> Census data for 1587-1588 shows that there were 258 pre-university teachers in Venice, of whom 75 taught in the vernacular schools. There were 2,160 pupils in the humanist schools and 2,465 in the vernacular schools [Grendler, 1989, pp. 48-49]. The population of Venice in 1587-1588 was 149,000 [Grendler, 1989, p. 31] and 115,000 in 1509 [[www.wga.hu/database/glossary/cities/venice.html](http://www.wga.hu/database/glossary/cities/venice.html)]. Assuming linearity between population, teachers, and pupils, there may have been approximately 58 vernacular school teachers in Venice around the time *SA* was published.

ics, but it does not represent a very significant market. Even if extrapolated to all of Italy, it is unlikely to have amounted to more than one thousand individuals. In addition, they typically earned less than university teachers, so only the more successful would have been able to afford a copy easily. Nevertheless, some consideration must have been given to this potential market when the decision to print 1,000 to 2,000 copies of *SA* was made [Sangster, 2007].

*Craftsmen, such as Architects, Artists, Engineers, and Stonemasons:* As an *abbaco* text, the content of *SA* is aligned with the *abbaco* instruction that is likely to have formed the basis of this group's education [see Camerota, 2006]. The advanced material in Volume 2 of *SA* was highly suitable for those craftsmen who might use it in their work [Olschki, 1919], a market targeted directly when Pacioli published *De Divina Proportione* [1509a]. However, most craftsmen would have had much less work-related use for the contents of Volume 1.

Therefore, the book in its entirety was not likely to have appealed to craftsmen as an aid to their work unless they ran their own businesses, although the positioning of geometry in a separate volume was probably intended to enable that volume to be sold separately to this group should they wish to purchase it for that purpose.

Evidence from library catalogue entries relating to extant copies suggests that they did not do so as virtually all extant copies contain both volumes. This is unsurprising since craftsmen often worked for wealthy patrons and were therefore likely to have been able to consult the book from the library of their patron should they have felt the need to do so. They could even have requested a patron to purchase a copy for that purpose.

It is, however, possible that a craftsman whose son was attending a vernacular school would have purchased the book. It is also possible that a more successful craftsman may have purchased the book for the entertainment he would have derived from the problems it contained in the arithmetic and algebra sections [see Baxandall, 1972, p. 101]. While this was not a large market compared to the much more affluent merchant market, it is possible that the two volume division of *SA* was created so as to increase the appeal of the book to this group.

*The Upper Classes:* Pacioli used Latin in the Introduction, probably to impress the Italian upper classes and, in particular, his patron, the Duke of Urbino, to whom *SA* is dedicated. In addi-

tion, the initial letter of each section throughout *SA* is always represented by a decorative woodcut initial except the first two, which were left blank, to be hand-painted. This would have helped give the book the feel of high quality in the eyes of bibliophiles as it would have stood out to anyone opening the book and glancing at the first few pages. The fact that *SA* contained many more pages than a typical book of the period would also have been a major selling point in this market for large books were considered to be “important books” during the Renaissance, irrespective of their content [Harris, 2006]. Simply having a book of this size in a personal library would impress anyone who saw it.

However, despite Pacioli’s clearly having done what he could to convince this market of the merits of the book, the content is unlikely to have motivated its purchase. Apart from any who enjoyed mathematics as a hobby, which would have been relatively few as they were almost without exception educated in Latin schools where *abbaco* was not taught, those who did purchase it would generally have done so for its appearance rather than its contents. Some of the more enlightened humanists would have warmed to the use of the vernacular, but many may have been alienated by both the use of a gothic typeface [Grendler, 1989, pp. 323-324] and by the “modern” focus and sources of much of the content.

Consequently, apart from the Introduction and the two blank initial letter sections, the content of *SA* was not affected by this potential but small market. Nevertheless, it was a market into which Pacioli, the sponsor of the book, or the printer of the book could have presented “free” copies and gained the rewards in return that were typical of the era, such as money or property.<sup>22</sup> *SA* was neither written primarily for this market nor for anticipated small sales into this market, contrary to the view expressed by Yamey [2004].

*Merchants:* The discussion in earlier parts of this paper concluded that merchants were probably the primary market for *SA*. All but the most experienced merchants would have benefited from instructional material in the book relevant to their trade, such as estimating the contents of a container of any size or proportion, a crucial aspect of most merchants’ trade and

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<sup>22</sup> See, for example, Richardson [1999, pp. 51-56] for a discussion of this form of income generation, which almost certainly explains the content of the Introduction to the book.

one of the principal subjects covered in the geometry volume; how to calculate complex numerical problems quickly and accurately; how to calculate exchange rates when multiple currencies and/or barter were involved, both common occurrences in 1494; the steps to take to ensure that debts were honored; and how to ensure that the accounting records of the business would be accepted as legitimate.

Pacioli emphasizes the usefulness to merchants of the material preceding the bookkeeping treatise, which includes 300 pages on arithmetic and algebra, by stating at the start of the treatise (Folio 198 verso) that all that preceding material is essential for an understanding of the content of the treatise.<sup>23</sup> A merchant would have seen even more use for this earlier material than Pacioli suggests for the first two sections on commercial arithmetic and algebra contain numerous examples applied to business. Other elements of the book, the manner in which it would have been marketed and the background of the merchants themselves, increased the likelihood of purchase by this group.

*Geometry and Proportions:* To merchants, all the material after the bookkeeping treatise would have appeared no less important than the rest of *SA*. Knowledge of geometry was a fundamental attribute of being a merchant in the late 15th century, and the use of the words, "*Proportioni et Proportionalita*" in the title of the book would have been a clear indicator to merchants that the book contained material relevant to them on that topic, recalling their time spent studying gauging (geometry) and proportions in their *abbaco* schools.

*The Influence of the Bookseller:* It would not have taken more than a quick glance inside the book for merchants to have confirmed that *SA* could be an ideal reference text for them to use in their business, especially as the bookseller would swiftly have guided them to what Pacioli wrote about the rest of the book in both the introductions to the bookkeeping treatise and to the book itself.

*First Generation Merchants:* Just as is the case today, merchants were not necessarily themselves sons of merchants. They may

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<sup>23</sup>The text states that the second (of three) things necessary in business is to be a good bookkeeper and ready reckoner, and, for this reason, all the basic canons and rules required for any operation are included in the preceding sections of the book.

well have had the benefit of *abbaco* schooling, but they would have been unable to obtain advice on business from their fathers. *SA* would have provided much of the advice they may have otherwise received from that source. The bookkeeping treatise, for example, has many recommendations for merchants, such as only keeping one set of books, avoiding taking advice from the ignorant, and working hard to be successful.

*Mathematics as a Hobby (Abbaco School Attendees)*: Having attended an *abbaco* school, many of the merchants would have been devotees of recreational mathematics and would, as with craftsmen, have been attracted to the book by the large number of problems it contained in the arithmetic and algebra sections. Merchants would generally have been more financially equipped than the craftsmen to purchase it.

*Merchants with Sons Attending an Abbaco School or Being Privately Tutored*: Merchants with sons attending an *abbaco* school would have had an incentive to purchase the book so that their sons could use it in their studies. Usual practice was for pupils of those schools to take whatever relevant texts their family possessed to school [Grendler, 1989]. Even Venice alone was a large potential market. Around the time *SA* was printed, there were probably some 1,900 pupils in the vernacular schools of Venice of whom approximately 80% were at the secondary *abbaco* level, the majority the sons of merchants [Grendler, 1989, p. 49].

In addition, many merchants who did not send their sons to vernacular schools employed private tutors to educate them. *SA* would have been extremely useful to those tutors in providing them with the material they needed to carry out their task. Merchants in either situation would have had the double benefit from owning a copy; a reference text for their own use and one that could be used to educate their sons.

*The Bookkeeping Treatise*: The bookkeeping treatise itself would have been invaluable to many merchants. While bookkeeping was one of the subjects taught in the *abbaco* schools and by the tutors of merchant sons, the method taught depended upon the knowledge of the teacher and any text used by that teacher. *SA* contained what Pacioli described as instructions in how to use the superior<sup>24</sup> Venetian method. Consequently, merchants could

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<sup>24</sup>Yamey [1994b] uses the term, "the best"; Nobes [1995, p. 383] suggests that Pacioli used a term meaning, "much recommended."



follow its advice on how better to maintain their own accounting records. Further, those merchants who employed a bookkeeper could instruct them to use it in order to switch to the Venetian method or improve its application. The merchant could also use the bookkeeping treatise as a guide to ensure that his bookkeeper was actually recording inventory and transactions in the appropriate manner. This would have been particularly useful to merchants lacking either the benefit of *abbaco* schooling or a bookkeeping tutor for they would have been open to fraud by their bookkeeper, a theme raised by Pacioli in the treatise. *SA* effectively gave merchants the capability to audit their bookkeepers through standardizing the *DEB* method in use.

At 119 soldi, *SA* was a very expensive book in comparison to *Aesop's Fables*, an extremely popular book of the period used in the primary years of the vernacular school curriculum, which sold for approximately 2 soldi [Richardson, 1999, p. 115]. Merchants were the new middle class, many of whom were extremely wealthy. Even those who were not would have understood the advantages of possessing a text like *SA* and view it as a worthwhile investment.

It is said that copies of *SA* flew off the shelves of booksellers as merchants from all over Europe rushed to obtain a copy [Favier, 1998]. While this was probably an exaggeration, *SA* sold steadily over a long period [Sangster, 2007], presumably as merchants came to hear of its existence and appreciate its relevance to them. This longevity of sales plus the number of extant copies, at least 120 of the 1494 edition [Sangster, 2007] support the view that it was used as a reference text [Harris, 2006] to be consulted when needs arose. The high survival rates are consistent with a book's use for reference.

## CONCLUSION

Analysis of previous criticism of Pacioli's bookkeeping treatise in the context of life in 15th century Italy identified two clues as to the intended primary market for *SA*. These clues lead to an explanation for the inclusion of material on bookkeeping and may also account for the presence of other material in the book. The first clue was the criticism that the virtual absence of any worked examples in the bookkeeping treatise meant that only merchants, or those with access to merchants' records or to suitable advice, would be able to follow fully the Venetian method of double entry. This is consistent with Pacioli's own statement in the Introduction that it was intended for merchants and

written to promote the adoption of the superior Venetian method of DEB. The lack of worked examples meant that anyone else would have found it difficult to understand or learn DEB from the treatise. This then raised the question as to why include it in SA if the people who could follow and learn from it were not also intended to read the remainder of the book. Did this mean that the rest of the book was also intended for merchants?

The second clue was the fact that printing was in its infancy in 1494, and that nothing was included in a printed book unless considered essential. Pacioli would easily have been able to provide worked examples to include in the text but chose not to.

Putting both these clues together leads to the conclusion that the bookkeeping treatise was not only intended to be read and used by merchants and their sons, it was designed specifically for them. Further analysis of the content and sequencing of SA indicates that the entire book was written primarily as a reference text for merchants and as a school text for their sons. It was sourced mainly from *abbaco* texts and mirrored much of the curriculum of the *abbaco* schools attended by the sons of merchants. It was an extended text that included all extant material known to Pacioli to be directly relevant to merchants. No *abbaco* school or tutor would previously have had access to such a wide range of relevant material in a single source.

Following a discussion of the nature of schooling in Renaissance Italy, the importance of a number of other potential markets for SA was considered. As a result, it has been possible to discount the possibility that the book was written primarily for university students or university teachers of mathematics, principally because of its having been written in the vernacular and its lack of relevance to the university curriculum. A similar conclusion was reached concerning the upper classes.

Small markets were identified for non-university mathematicians, particularly because of Pacioli's treatment of algebra, and craftsmen (e.g., architects, artists, engineers, and stonemasons), principally because of the geometry section of the book and the problems in the arithmetic and algebra sections. A potentially larger market was identified in the form of *abbaco* school teachers and those who acted as private *abbaco* tutors to sons of merchants and craftsmen because of the alignment of the entire book to the *abbaco* curriculum. But this market was seen as minimal compared to the most likely principal market for the book – merchants.

Just as the *abbaco* schools taught all that was considered important for a merchant to know, so SA presented merchants with

all the generic (i.e., non-trade specific) information they needed to run a business, some of which they would already have known by virtue of their schooling and experience, and some of which they may never have known or may have forgotten. Apart from its use to them in their business, many merchants would also have been motivated to purchase it because of the large number of arithmetical puzzles it contains. Some would have been motivated to buy it because they had sons attending *ab-baco* schools or under tutelage. It therefore seems reasonable to conclude that *SA* was intended primarily as a reference text for merchants and as a school text for their sons, and that the large majority of sales of the book were to the mercantile classes.

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## **THE LEDGER OF ANN DEWITT BEVIER (1762-1834), EARLY AMERICAN ESTATE MANAGER AND MOTHER**

*Abstract:* The ledger that Ann DeWitt Bevier kept from 1802 until 1813 represents a rich primary source that provides perspective on how a rural agriculturalist and household head interacted with the social and cultural environment in the young American nation. Her accounting records expand the gendered history of economic life by illustrating the life and work of a woman who managed a farm, family household, brick kiln, rental property, and investments in financial instruments. The costs of educating her children were also detailed in the ledger, helping to inform us about the educational opportunities for females in early America.

### **INTRODUCTION**

Ann DeWitt Bevier was widowed on April 18, 1802, and with her husband's death, she assumed responsibility for managing the family's agricultural interests, supervising a staff of both slave and free labor, and raising their eight children. On April 19, 1802, Ann Bevier began keeping detailed accounting records, in her careful and comely script, to track her business and personal affairs. The ledger that she maintained until 1813 represents a rich primary source that provides perspective on how a rural agriculturalist and household head in New York's mid-Hudson River valley interacted with the social and cultural environment in the young American nation. Like a diary, such an accounting record tracks aspects of an individual's life, focus-

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ing on the ongoing activities of daily living and their economic impact. The detail that Bevier included in her ledger helps create a unique perspective on her life as she managed a farm, family household, brick kiln, rental property, and investments in financial instruments, and so expands the gendered history of economic life. Bevier's ledger and other primary sources in the

**FIGURE 1**

**Anne DeWitt Bevier**



Source: Portrait of Mrs. Philip DuBois Bevier (Ann DeWitt) painted by Ammi Phillips (1788-1865), ca. 1820



archives of the Huguenot Historical Society in New Paltz, New York were used along with secondary sources to develop this history. Around 1820, when Bevier was about 60 years of age, the portrait that appears in Figure 1 was painted by American folk artist Ammi Phillips. His rendition confirms the impression conveyed by her ledger of a no-nonsense businesswoman.

Accounting records, such as this ledger, expand our understanding of past business and accounting practices and offer insights into economic and social life [Vollmers and Bay, 2001, pp. 43-45; Vollmers and Tyson, 2004]. Accounting for family endeavors is worthy of academic scrutiny [Walker and Llewellyn, 2000, pp. 427, 429, 433], and this study extends the literature that documents daily life and culture, based on the use of accounting records of small family businesses [see, for example, Carnegie, 1997; Walker, 1998; Vollmers and Bay, 2001; Schultz and Hollister, 2004; Vollmers and Tyson, 2004]. Financial documents also shed light on differences of power and control in the community related to gender and class [Tinker and Neimark, 1987; Fleischman and Tyson, 2000].

Traditionally, social and cultural historians have focused on a society's key institutions and the powerful individuals who shaped them. The impact of these institutions on the lives of ordinary people has rarely been subjected to comparable scrutiny. Seeking to tell a fuller version of history, micro historians focus on the everyday experiences of both ordinary and atypical individuals who help to shape society through their daily conduct and behavior. By studying the source documents authored by those who participated in history, we gain a sense of how individuals, families, and small groups interacted with their immediate environment and with the social institutions that shaped their daily lives. Micro history has become an increasingly popular approach to historical analysis in Europe and should prove useful for studying American history, particularly as a means of examining issues related to gender, race, and ethnicity [Magnússon, 2006a, b].

The dominant narratives about business history have similarly excluded the history of women in American business. Existing studies either mention businesswomen in passing or celebrate the achievements of those who enjoyed unusual visibility or success [Gamber, 1998]. These portraits of exceptional women unintentionally reinforce the notion that business was a masculine concern. Recent efforts have begun to correct his omission [see, for example, Lewis, 1992, 1995; Gamber, 1998; Kwolek-Folland, 1998; Drachman, 2002]. Documenting women's

engagement in the world of economic exchange helps convey the scope of their activities in the young American nation and gives breadth to the nature of activities normally associated with business. Making women visible not only helps identify the diverse group of actors engaged in the world of business but also confirms the predominance of men [Scott, 1998].

In colonial and early America, women's involvement in business typically occurred within the context of their family's needs rather than in the pursuit of individual satisfaction or personal autonomy, although these outcomes may have resulted. Thus, women's business roles were inconsistent with the view of entrepreneurship as a personal endeavor as espoused in the 19th century liberal model. Although the political and economic powers of women may not have equaled those of men, the female presence in the business world of the 19th century deserves recognition [Kwolek-Folland, 1998, pp. 1-46].

#### LEGAL AND ECONOMIC CONSIDERATIONS

Widows were among the most active businesswomen in early America. Under the common law legal tradition followed in colonies that had been under British rule, like New York, women were generally considered to be men's dependents rather than independent civic, economic, and legal actors. Married woman had the status of *feme covert* under common law, while unmarried adult women had the legal status of *feme sole*. A *feme sole* could own property and make contracts in her name alone, while a *feme covert* generally could not. Thus, widows, who had the status of *feme sole*, were inordinately represented among businesswomen in early America [Kwolek-Folland, 1998, pp. 13-29; Drachman, 2002].

Account books of the era, including the one maintained by Ann Bevier, also reflect the legal status of females since the vast majority of accounts were maintained in the name of a male head of household. The rare account in a woman's name was typically that of a widow. In contrast, the civil law system followed in Spanish and French colonies gave women greater access to property and financial resources compared to the common law tradition. However, both systems were patriarchal and hierarchical, treating women differently than men. Reform would not come to women's property rights until the mid-to-late 19th century.

Perhaps evidencing her new legal status, Bevier started her own ledger after she was widowed rather than merely

continuing her husband's book, although she did refer back to his entries when carrying balances forward. It is impossible to determine to what extent she may have been involved in the management of the family's estate prior to the death of her husband, Philip DuBois Bevier. If he had been in poor health for some time, she may have taken a leadership role before as well as after his death. Perhaps Philip Bevier had followed the advice offered by Daniel Defoe in *The Complete English Tradesman*, first published in 1762. Defoe [1839, chap. XXI, para. 9] "would have every tradesman make his wife so much acquainted with his trade, and so much mistress of the managing part of it, that she might be able to carry it on if she pleased, in case of his death."

As late as the turn of the 19th century, more than 90% of the American population made at least part of their living from agricultural production. Most enterprises were owner-managed and based on familial or social ties. Although some farming was subsistence oriented, many farmers were able to produce an excess that could be shipped to distant markets. Such market-oriented production became increasingly important throughout the colonial and early national period [Kwolek-Folland, 1998, pp. 213-215]

Many farmers in New York's mid-Hudson River valley became prosperous exporters of agricultural produce. Goods were first transported to one of the Hudson River ports, such as Kingston, and then shipped down river to New York. The local farmers utilized the services of various small mills that were erected on nearby streams. Ann Bevier lived in the Town of Rochester, which was known for its deposits of dark sandstone or bluestone, which were quarried, as were the limestone ridges that provided a source for agricultural and building lime [Kyserike Restorations, Inc., 1995].

Local economies in colonial and early America were largely based on asynchronous barter transactions in which farmers engaged with their neighbors and area shopkeepers. Barter accounting was used to keep track of balances due from or to the individuals with whom one traded. Such balances resulted because payments made in the form of agricultural commodities could not be delivered until after the harvest. When goods or services were exchanged, exact settlement was difficult, and a balance was often left over. A monetary unit of account was needed to record these transactions, and the English settlers adopted the familiar units of pounds, shillings, and pence (£.s.d.). These same units were to denominate the paper notes issued by the American colonies. With the birth of the new

American nation and passage of the 1792 "Mint Act," the dollar became the principal unit of currency. Nevertheless, pounds, shillings, and pence continued to be used as units of account for many small businesses in the mid-Hudson valley into the mid-19th century. With the availability of a stable currency, cash would increasingly become the preferred medium of exchange as the 19th century progressed, which in turn helped fuel economic development [Baxter, 1946, 2004; Jordan, 1998; Schultz and Hollister, 2004].

#### ANN DEWITT, PHILIP BEVIER, AND THEIR ACCOUNTING RECORDS

Ann DeWitt was born on October 26, 1762, the youngest of the three children of Petrus DeWitt and Rachel Radcliff. Like her parents and grandparents, she was raised in New York's mid-Hudson region but was descended from 17th century immigrants to the New World from Holland and England. At age 20, Ann married Philip Bevier, who had served as a captain in New York's Continental Army during the American Revolution [Hasbrouck, 1970, p. 142]. Born December 28, 1751, Philip Bevier was the younger son of Louis Bevier III and Esther DuBois, who were descended from French Huguenots who had emigrated to New York's mid-Hudson River valley. As the union of Ann and Philip suggests, marriages between French settlers and those of Dutch or English ancestry became more common as the generations passed. Bevier was a wealthy man; he had inherited the major part of his maternal grandfather's estate in Rochester, along with other lands obtained by inheritance and through bounty rights granted for his service to the revolutionary cause. He became involved in state and local politics, serving in the New York State Assembly, as an Ulster County court judge, and in a variety of roles in the Town of Rochester, including clerk, supervisor, school commissioner, overseer of highways, and town justice [Hasbrouck, 1970, p. 141-150; Roth, 1998].

A ledger that Philip Bevier originally inscribed at Fort Montgomery in 1777 has survived in the archives of the Huguenot Historical Society. It includes lists of the arms and clothing distributed to the men in his company during the war.<sup>1</sup> The majority of the book dates from 1783 to 1785 and reveals that during

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<sup>1</sup>The account books of Philip and Ann Bevier are in the archives of the Huguenot Historical Society in New Paltz, NY. They are part of the Philip DuBois Bevier Family Papers (1685-1910) collection, Series 3: Account Books, Personal Estate of Philip DuBois Bevier (1742-1867).

the early years of the couple's marriage, Bevier was conducting a general store business retailing liquor, tobacco, textiles, food-stuffs, and building supplies to his neighbors. The extant ledger is in the form of a daybook, but the accompanying account book has apparently not survived. Its existence is confirmed, however, by the posting references in the daybook and by the alphabetical index to the names in the account book that appears in the ledger.

Figure 2 shows an excerpt from page three of Philip Bevier's daybook, dated in Rochester on October 4, 1783. Although the page was apparently started on this date, it includes several transactions of earlier or later dates. Use of the accounting terminology common during the period is apparent, with "to" introducing amounts charged or debited to the customer's account and "by" prefacing customer credits. In the first entry, we see that Moses Depuy was charged for two and one-half gallons of rum picked up by Hebron and another two gallons picked up

FIGURE 2

## Daybook of Philip DuBois Bevier - October 1783

3		Rochester 4 <sup>th</sup> October 1783				
1783		Moses Depuy Dr.				
ab. 11		2 1/2 Gall <sup>ns</sup> Rum fr <sup>m</sup> Hebron at 6/6		"	16	3
Nov:	7	2 Gall <sup>ns</sup> Rum fr <sup>m</sup> Hebron at 6/6		"	12	-
		by Cash - - - - - 10 9 0			1	9 3
Sept:	30	George Johnston to 3 Quarts Rum -		"	5	3
Oct:	3	1 1/2 Gall <sup>ns</sup> of 1 Quart Rum 1/3				
ab. 4		D <sup>r</sup> C <sup>o</sup> by 2 <sup>nd</sup> Trippe & Foreward 10 12 0			7	9
ab. 5		Widow Dubous Dr <sup>m</sup> 4		"	5	6
		to Mrs Haverbrook - - - - - 0 7				
ab. 5	25	1 1/2 brandy to Negro Dub. So 2 0				
	31	1/2 Gall <sup>ns</sup> brandy to do 0 3 6				
		1 felt Bath - do 0 4 6				
Nov:	10	4 <sup>th</sup> Dr <sup>m</sup> fr <sup>m</sup> wife 0 5 6				
	13	1 1/2 brandy fr <sup>m</sup> Pet 0 2 0		"	17	6

Source: The Account Book of Philip DuBois Bevier (1783-1785), Huguenot Historical Society, Philip DuBois Bevier Family Papers collection (1685-1910).

by Amos. With rum selling for 6s.6d. per gallon, the total cost was £1.9s.3d., of which 9s. was paid in cash on November 7. The next entry recorded George Johnston's purchase of tea at 6s. per pound and rum at 1s.9d. per quart. Thus, the gallon price for rum (6s.6d.) was discounted somewhat from the quart price since four quarts at 1s.9d. per quart would have totaled 7s. The total charges of 13s. to Johnston's account were offset by a 12s. credit based on the delivery of two "skipples" [sic] of wheat (the Dutch *schepel* was equivalent to .764 bushels) [Versteeg, p. 765]. In addition, Bevier charged the widow Dubois for the purchase of snuff and Jonas Hasbrouck for the purchase of brandy, snuff, and a felt hat, all of which were picked up by his Negro, his wife, or Peet. Again we see a quantity discount for the brandy, which cost 2s. per quart but 3s.6d. for a half gallon. Recorded in the left-hand columns of the daybook were the date and a posting reference that identify the customer's page in account book AB.

A majority of the transactions recorded in Philip Bevier's ledger involve liquor, tobacco, yard goods, and sewing supplies (such as needles, thread, and the dye indigo). However, a broader variety of items was available, including provisions (primarily sugar and pepper), household goods (blankets, brooms, cups, plates, and teapots), and tools (knives, files, and awl blades). Customers paid for purchases with cash or by delivering local products (such as veal, wheat, corn, butter, beer, candles, and wax) or services (such as tailoring).

The Beviers raised seven daughters and one son; an eighth daughter died in infancy. Philip, who had never been in robust health after his army service, signed a will in April 1801, which specified that Ann was to be the sole manager and overseer of his estate as long as his children were minors.<sup>2</sup> She and Philip's brother David were designated executors of the estate. She was to receive a yearly stipend of \$100 provided she did not remarry or \$40 if she did. In his will, Philip singled out his only son Louis to receive a specific parcel of land. Philip further stipulated that the executors should provide Louis with a liberal education in a profession of his choosing. He made no mention of education for his daughters, but he did provide for an equal division of his assets among all eight children after specific bequests were made.

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<sup>2</sup>Based on the British common law tradition, children ceased to be minors at age 21. Although 19th century laws in some states provided for females or married individuals to achieve majority at an earlier age, those in New York apparently did not ["Legal Rights of Minors...," 1897].

One year after drafting his will, Philip Bevier died at age 50, leaving his wife with eight children ranging in age from five to 17. Immediately after Philip's death, as she assumed sole responsibility for managing the family's farm and other assets, Ann began recording her business and personal transactions in a ledger. She developed an information system that apparently met her needs although it differed somewhat from the typical single-entry accounting approach used during the era.

Generally, daybooks, such as the one seen in Figure 2, were used to maintain a chronological record of transactions. Any balances that were not immediately settled were posted to the individual's page in the accompanying account book.<sup>3</sup> Ann Bevier did not maintain a daybook but instead divided her ledger into sections devoted to tracking cash receipts, cash payments, and the accounts she maintained with individuals. Transactions with individuals for whom she maintained an account were recorded directly in the account, even when immediately settled with cash. Cash transactions with other people were recorded in the cash receipts or disbursements pages. There were no postings between the cash journals and the accounts. Thus, absent the use of a daybook, Bevier's approach did not provide a complete record of transactions in one place. Also, since many cash transactions were recorded directly in the accounts, a tally of the total amount of cash received or paid out during a specific period could not be easily determined.

Nor did the ledger contain any evidence of the measurement of profit or financial position or an annual closing process, which is consistent with the contents of other account books of this period examined by the authors. From our present-day perspective, the absence of profit centers and measures of annual earnings and financial position seems to leave an inadequate accounting information system. However, in the context of an era with no taxes on earnings and no requirements for a small firm to report to external parties, it sufficed.

Ann Bevier recorded transactions in her ledger using pounds, shillings, and pence as the units of account. A number of entries also included dollar units in the descriptions of cash flows or prices. As is typical of a single-entry accounting system, the ledger contained only personal accounts, which might represent either receivables or payables, depending on the balance. Bevier maintained accounts for 85 different heads of household

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<sup>3</sup>See Schultz and Hollister [2004] for an expanded discussion of the use of single-entry accounting in early America.

in her ledger. Many of the accounts were with individuals who worked for her as agricultural workers or in crafts such as construction, masonry, blacksmithing, shoemaking, spinning, and weaving. Other accounts were with the neighbors with whom she exchanged agricultural commodities, livestock, and the bricks produced on her estate. On the 1800 U.S. census, within a page of the entry for Ann Bevier, the names of holders of about 14% of the accounts in her ledger appeared, suggesting that a number of her transactions were with proximate neighbors.

### ACCOUNTING FOR THE FARM AND HOUSEHOLD

As might be expected, the earliest entries in the “cash paid out” section of Ann Bevier’s book were related to the purchase of sundry articles for mourning. Some were bought locally in Kingston, which was about 20 miles distant and had a population of 4,500 in 1800. Others had been purchased in New York, then the largest city in the nation with a population of 60,000, which lay about 100 miles to the south. She paid the surrogate about £2 for proving her husband’s will. Jacob Coddington probably handled this transaction on her behalf as he received 6s. for travel to Kingston related to the will. In July 1802, Coddington and another man spent two days taking an inventory of the deceased’s assets for which they were compensated at the rate of 8s. per day. Although Bevier began her ledger the day after her husband’s death in mid-April, the cash receipts section was not started until after the inventory was taken in July; amounts received prior to this date were included on the deceased’s inventory. Similarly, the interest and principal due on notes as of the date of her husband’s death were entered in his ledger, which she refers to as “book A,” but which apparently has not survived.

Jacob Coddington was an immediate neighbor of the Bevier family, judging by the 1800 census listing. He was licensed as a tavern and hotel keeper and conducted considerable legal business, although he was not a professional lawyer [Sylvester, 1880, p. 214]. Ann relied on him to draw up agreements and leases, negotiate the settlement of old accounts, and file deeds and mortgages, requiring him to travel to Kingston or the state capital at Albany at her expense.

A serious businesswoman, Bevier took steps to collect on her receivables. In October 1803, she recorded the payments that had been received in full from several notes put in the hands of attorney Derrick Westbrook for collection. Similarly, she was quick to put the balance due on her account with Wil-



lam Maurius Groen into the hands of an attorney for collection when he failed to pay for the fat sheep and lambs he had purchased. Bevier eventually collected payment from the attorney.

On the Bevier farm, crops and livestock were raised for consumption, for local sale and barter, and for export to the New York market. The main market crop was wheat. Ann recorded several memoranda inside the front cover of the ledger related to the wheat produced and marketed in 1804. These notes indicated that 200 bushels of wheat were delivered to Moses Depuy's gristmill in April, along with 41 barrels to contain the flour. During May and June, half the barrels were delivered to Captain Thomas van Gaasbeek and half to Abraham Hasbrouck, all for shipment to New York. No monetary values were recorded in these memoranda, nor did similar notes appear in subsequent years. However, the accounts she kept with van Gaasbeek and Hasbrouck include information about the prices and quantities of the wheat and other goods produced on the Bevier farm that were transported to market by these men.

*Accounts Maintained:* Bevier maintained an account with Captain van Gaasbeek during 1803 and 1804. She debited the account for the value of the oats, corn, flour, beef, and nuts that were delivered to him. Account credits were recorded for the cost of shipping and inspecting the flour and for various items that he had obtained for her in New York, including shears, hinges, plaster, steel, a scythe, a wagon tire, and salt.

Bevier's account with Abraham Hasbrouck covered six non-sequential pages in her ledger, spanning the period from 1803 to 1812. Hasbrouck was a leading Kingston merchant who freighted goods to New York by water. He also had a variety of other business interests and served as a representative in state government and the U.S. Congress [LeFevre, 1909, p. 384; *Biographical Directory*, 2005]. As an intermediary between local agriculturalists and the New York market, Hasbrouck would take delivery of crops from mid-Hudson valley farmers, sell some locally, and transport the rest to New York where they would be exchanged for the imported products that his Kingston customers desired. The advertisement for Hasbrouck's store that appears in Figure 3 indicates that a general assortment of dry goods and groceries was available for sale in exchange for cash or country produce.<sup>4</sup>

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<sup>4</sup>Although Hasbrouck's ad indicates that it was placed on September 14, 1798, this appears to be a typographical error. More likely, the ad was placed in 1799, as was another announcement placed by Hasbrouck in the same paper.

Hasbrouck also notes his willingness to purchase wheat and flaxseed for cash. Flaxseed was primarily used to make linseed oil for painting and burning; it provided a source of animal fodder and had medicinal purposes as well. The flax fiber would have been used locally to make linen. Prior to and immediately after the Revolution, flax was prepared, spun, and woven in nearly every household [Bolles, 1881].

### FIGURE 3

#### Advertisement for Abraham Hasbrouck

ABRAHAM I. HASBROUCK,  
**R**ETURNS his cordial thanks to his  
 Friends and the Public in general,  
 for their past favors, and respectfully in-  
 forms them that he continues in the  
**MERCANTILE & BOATING BUS-**  
**INESS,** and has on hand

A General Assortment of

**D r y G o o d s**

A N D

**GROCERIES,**

Which he will dispose of upon the most  
 reasonable terms for **CASH OR COUN-**  
**TRY PRODUCE.**

Kingston Landing, Sept 14, 1798.  
 N. B. Wanted to purchase a quanti-  
 ty of **WHEAT** and **FLAXSEED**, for  
 which **CASH** will be given.

Source: Ulster County Gazette of January 4, 1800. Early American Newspaper Collection (1783-1835), Huguenot Historical Society, New Paltz, NY.

The farm products that Bevier delivered to Hasbrouck between 1803 and 1811 and debited to his account are summarized in Table 1. Additional debits, not included in this summary, were recorded for cash payments and for one-time deliveries of wool and broadcloth. In 1803, only 20 bushels of corn were delivered to Hasbrouck, but the following year, 21 barrels of flour, graded variously as fine, superfine, and middlings were delivered, along with 23 bushels of flaxseed. In addition to the £15.10s.6d. due for the flaxseed, Bevier charged Hasbrouck an additional 8s.

for the container in which it was packed. During the spring and summer of 1805, both wheat and flour were delivered to Hasbrouck with wheat priced from 16-17s. per bushel and flour from 60-66s.6d. per barrel, depending on grade, with superfine flour carrying the highest value. The cost of the freight and inspection of the flour, paid by Hasbrouck, was credited to his account.

**TABLE 1**  
**Debits Recorded for Products Delivered to**  
**Abraham Hasbrouck**

Year	Products Delivered				
	Wheat and Flour	Flaxseed	Pork and Veal	Corn	Nuts
1803				£5	
1804	£47	£16			
1805	75	13			£11
1806	130				3
1807	39		£4		
1808	46		17		7
1809	53	8		6	
1810	25	7		14	
1811	59	7	22		
totals	£474	£51	£43	£25	£21

Flaxseed and nuts were delivered to Hasbrouck in the autumn of 1805 for sale in New York. The flaxseed was recorded at 12s. per bushel, but Bevier noted that the price would be adjusted if the market price varied from the recorded amount. In 1806, nearly 198 bushels of wheat were sold to Hasbrouck, most of it priced at 13s. per bushel. The terms “on price” or “NY price” indicated that the market price from New York was used as the basis for recording a transaction. Agricultural commodities, then as now, were valued at their realizable values. In 1807, both the quantity of wheat delivered and the unit price fell, with only 87 bushels recorded at the New York price of 11s. That year, Bevier also delivered about 50 pounds of veal and 95 pounds of pork to Hasbrouck, recording compensation of 5-6s. per pound for the meat.

During 1808, 110 bushels of wheat, now valued at only 8s.6d. per bushel, were sold to Hasbrouck along with 18 pounds of veal, 130 pounds of pork, six hogs, and 23 bushels of walnuts. By 1809, the price of wheat had risen to 11s.8d. per bushel in June and to 13s. by September. Nearly 90 bushels were sold,

along with 20 bushels of Indian corn, 14 bushels of flaxseed, 20 pounds of wool, and a couple of yards of broadcloth. In 1810, Bevier delivered only 37 bushels of wheat, along with 40 bushels of Indian corn and 16 bushels of flaxseed. Finally, in 1811, 80 pounds of wheat were sold, together with flaxseed and four barrels of prime pork. The totals in Table 1 make clear that wheat was Bevier's primary market-directed crop, with a total of £474 generated from wheat sales to Hasbrouck between 1803 and 1811. During this period, over 77% of the total debits to Hasbrouck's account were from the sales of wheat and flour; 8% were attributed to flaxseed, a slightly lower percentage to pork and veal, and corn and nuts each contributing less than 5% of the total revenues recorded from shipments to Hasbrouck.

In exchange for these agricultural products, Bevier obtained a wide range of goods from Hasbrouck, including food (mess pork, oysters, Carolina potatoes, tea, coffee, molasses, codfish, and spices); household and building supplies (plaster of Paris, bellows, shovels, indigo, copper, alum, Rhode Island lime, window glass, oil, painting supplies, iron, a hearth stone, a kettle, and blistered steel); and sewing supplies and personal items (silk velvet for a shawl, broadcloth, gingham, coat buttons, silk thread, cotton yarn, bonnets, parasols, writing paper, books, tobacco, and snuff). During the spring of 1807, an orchard was started or expanded when she acquired about 20 fruit trees from Hasbrouck, including cherries, plums, apricots, nectarines, and pears.

To process the wheat she grew, Bevier dealt with several local mills. One was run by Fredrick and Jonathan Westbrook, whose account in the ledger dates from 1803 to 1808. The Westbrooks' account was credited for the cost of grinding, bolting, and packing flour, as well as for charges for sawing logs, grinding plaster, and supplying wood for various purposes. The debits reflect the payment of cash, the provision of services in sowing and cutting flaxseed, and the delivery of goods, including a barrel of codfish, blistered steel, panes of window glass, hay, and lime. Thus, the same types of goods that Bevier acquired from Hasbrouck were used to settle her account with the Westbrooks' mill.

To staff the farm, Bevier employed a number of agricultural workers and craftspeople. The account of William Kelder provides a typical example. According to the 1800 census, Kelder, a neighbor of the Beviers, was over 45 years of age, as was his wife, and the couple had a young son and an older daughter at home. Kelder preformed a variety of services on the Bevier

estate, depending on the season and the work that needed to be done. Figure 4 shows the debit side of Kelder's account, which appeared on page 23 in Bevier's ledger. Bevier has labeled this page of the account "debtor," and after carrying a balance forward from page 22, she recorded that Kelder was paid with Indian corn, rye, tobacco, woolen fabric, and some cash denominated in both shillings and dollars. The total of the balance carried forward and the debits recorded during the winter of 1803-1804 were £4.2s.10d., which reconciled with the total shown on the credit side of the account (not illustrated here). Other pages of Kelder's account indicate that he was compensated with commodities including veal, pigs, pickled pork, tanned and untanned leather, sheepskin, fat, wheat, pepper, tallow, and straw, as well as by the right to pasture his colt. With the exception of the tobacco and pepper, the commodities that Bevier exchanged for Kelder's labor were likely produced on her estate.

FIGURE 4

## William Kelder — Debtor

23.		Rochester, in Ulster County		
		William Kelder		Debtor
		Brought over from p. 22. the Deb. side -		0..15.10
1803 Dec. 20		To 5 Shipples In. Corn		0.. 3..0
1804 Jan. 13		To 1 lb Tobacco		0.. 1..0
	27	To Cash, two Shillings		0.. 2..0
	30	To 1 bu. In. Corn		0.. 4..0
Feb. 14		To 3 Ells woolen Checks - @ 4s		0.. 12..0
	0	To Cash, one dollar		0.. 0..0
	14	To 1 bu. In. Corn		0.. 4..0
	21	To 1 bu. Rye		0.. 4..0
		Cash, two Dollars		0.. 16..0
		5 lb Tobacco, had some days ago -		0.. 1..0
March 5		To 1 bu. In. Corn		0.. 4..0
		To Cash, one Dollar		0.. 8..0
				4.. 2..10

Source: The Account Book of Ann Bevier (1802-1812), Huguenot Historical Society, Philip DuBois Bevier Family Papers collection (1685-1910).

The credit side of Kelder's account, which Bevier labeled "creditor," shows that he worked for her transporting stone, scoring timber, cutting wood, hoeing corn, and making and mending shoes and harnesses. Kelder was generally compensated at the rate of 3s. per day unless he was doing mending work for only 2s. Although interest charges rarely appear in personal accounts, Bevier charged interest on Kelder's balance during periods when the account was inactive. The account ran from 1803 to 1807, but most of the activity occurred during the earlier years. Kelder's account was eventually settled when Jacob Coddington paid the balance due.

While some workers, like Kelder, performed a variety of chores, other account holders primarily provided specialized labor, including blacksmiths, tanners and curriers, and shoemakers. Johannis Carson, for example, was a cobbler and leather worker who mended bridles and harnesses and made and mended shoes. When necessary, he would also mend plows and shovels, make brooms, chop firewood, cut logs and posts, and butcher meat. He was a tenant of Bevier's who received rent and products including corn, rye, shad, middlings, potatoes, buckwheat, beef, and seed corn in exchange for his labor.

Several accounts reflect the considerable work required to process the flax and wool raised on the farm. Bryan Spike, another tenant of Bevier's, was charged £5 rent in 1806 for the small frame house near the rocks. In exchange for his rent, he provided labor fulling, pressing, and coloring wool, cloth, and clothing, and received additional compensation in the form of tools, nails, lime, straw, potatoes, and cash. Another neighbor, Benjamin Bevier, worked coloring and scouring cloth, fulling cloth for Negroes' wear, dressing cotton cloth, and carding wool on his machine. In exchange, he received brick, lime, tallow, lamb, and cash. Although his account showed that a balance was due him, there was no indication that it was ever settled.

Noah Cross and Peter Ennist were two weavers who had accounts in the ledger. Cross received corn, beef, rye, and a turkey cock from Bevier under an agreement that he would perform all their weaving the following spring at the old price. She subsequently credited his account for weaving 50 ells of linsey-woolsey, noting that he was to be paid in grain "the old way" at 6 pence per ell.<sup>5</sup> Ennist produced various types of cloth including striped linen, bed tick, woolen check, and linsey-woolsey. He

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<sup>5</sup>Linsey-woolsey was a strong, durable fabric popular in early America, which consisted of linen or sometimes cotton warp and wool weft.

wove materials on different machines, denoted as the 800 and the 500 (likely referring to the density of the weave), and was paid at the rate of 5-6d. per ell produced. When the need arose, he was also prepared to work hoeing corn, making hay, picking apples, harvesting crops, and transporting goods.

Artisans in rural as well as urban areas tended to develop multiple competencies during an era characterized by migration and the omnipresent need for construction. The adaptability of these artisans and their focus on what was practical or useful led to the improvements on old processes that would ignite America's industrial revolution at the end of the 18th century, and accelerate it during the early decades of the 19th [Cochran, 1981, pp. 9-21; Hindle and Lubar, 1986, pp. 9-20].

*Cash Receipts:* Many of the cash receipts recorded by Ann Bevier related to sales of the products produced on the estate or to the collection of interest or principal on notes she held. A portion of the cash receipts journal covering 1806 and January 1807 appears in Figure 5. The first entry records the amount received from Ebenezer Lattimer for the brick and lime sold from the

**FIGURE 5**  
**Cash Receipts 1806-1807**

1806	Jan 24	Received of Ebenezer Lattimer for 400 Brick - 93 0 2 bat. Lime 4 1/2 -	1 0 0
	June 13	Received of Cornelius Hoornbuck, <del>for</del> in full for one year interest on his Bond	7 0 0
	July 10	Prec. for potatoes wt different Turnus -	1 0 0
	10	Prec. for Interest of Benj. Bevier Esq.	3 12 4
	19	Prec. of Trachus for 50 bunches Thaddeus	0 10 0
		Prec. of Henry Elting for 7 Sheep for Mullers of C. 7 1/2	4 19 0 0 5 6
	2	for Wool of Bransdorpha (Ht)	0 12 0
	10	Prec. for 2 bu potatoes & 7 lb wool of	3 1 9 0
	30	Prec. for 11 lbs Wool of Beothus	3 1 13 0
1807	Jan 15	- for 4 lb wool of John Garen	0 12 0
		Prec. of Cornelius Hoornbuck for Interest	7 0 0
		Prec. of James S. Bumpas Jun. for Interest	0 0 0

Source: The Account Book of Ann Bevier (1802-1812), Huguenot Historical Society, Philip DuBois Bevier Family Papers collection (1685-1910).

kiln that he apparently operated on her behalf. Other receipts were recorded when potatoes, sheep, and mutton were sold. Cash was collected for straw that had been thrashed and for wool that Bevier seems to have obtained from other farmers and was now reselling. During this period, the largest cash inflows were for the receipt of interest, totaling over £25. The cash receipts journal also recorded sales of vinegar, butter, corn, veal, turkey, oats, flax, cows, and wheat.

*Cash Payments:* Disbursements were made for a variety of purposes. Household items were purchased on shopping trips to Kingston, Albany, or New York, including rum, sugar, pepper, tea, coffee, and yard goods. Other items were purchased locally from peddlers, including muslin, calico, handkerchiefs, thread, and fish. Cash payments to the laborers and craftspeople for whom she did not maintain an account were recorded in this section of the ledger; for example, the payments to Richard Barrett, a weaver who did a substantial amount of work in the period after 1807. The tasks that Bevier paid for with cash were similar to those recorded on account, including harvesting, hoeing, making flour, sawing wood, blacksmithing, shoeing horses, coopering, tanning and currying, spinning, canning, and making shoes.

In spring 1807, Bevier recorded several cash payments that suggest she was financing a dairying enterprise to be run by Mr. Hurd. Their relationship started around the middle of May, when she covered half of his expenses in traveling to Kingston. Several days later, she paid Jacob Coddington for drawing up an agreement with Hurd. At the end of June, she bought five cows for his use in addition to one for herself.

Relatively few payments were made for tailoring, and several entries specify that clothing was being purchased for her son Louis. This suggests that the women's clothing was being made in the home from yard goods that were manufactured or purchased. Since no cash payments or account entries relate specifically to the seamstress work required to make dresses for Ann and her seven daughters, that labor was likely supplied by the women themselves or by their female slaves. In any case, the slaves would have been responsible for making garments for their own families.

Evidence about the number of people being maintained in the Bevier household as family members, slaves, or servants might be deduced from the number of pairs of shoes that were frequently purchased or mended. In February 1805, for example,



Bevier recorded the cost of making 20 pairs of shoes at 3s. per pair, a pair of boots for Louis at a cost of 8s., and mending 13 pairs of shoes at 1s. per pair.

Figure 6 shows a portion of the cash payments journal dating from the winter of 1803-1804. The tax for that year amounted to £3.9s., and 8s. was contributed toward the building of a bridge. The cost of making two pairs of leather britches for the Negroes was 14s.; Jacob Coddington was paid 15s. for drawing leases; and the cost of fulling at the mill was £1.18s. On January 3, 1804, Ann recorded a payment of £71.19s. to repurchase her Negro woman, Bet, who had been sold to Joachim J. Schoonmaker the previous September for £75.

FIGURE 6

**Cash Payments — Winter 1803-1804**

19	-- to Hendrick Osterhoudt Collector of Taxes, for this years tax	3..9..0
	-- gave S <sup>r</sup> . Osterhoudt towards a bridge They are Building at Lagawag	0..3..0
23	to Michal Underley jr. Son of Van De Marken for making 2 pair Leather britches for the negroes	0..14..0
30	to Jacob Coddington for draw- ing Leases	0..15..0
1804 Jan <sup>y</sup> 3	to Joachim Schoonmaker, for our Negro Woman Bet, who I sold to him, in September last now bought of him again	71..19..0
20	to Benjamin Bwier for fulling done at his Mill	1..18..0

Source: The Account Book of Ann Bevier (1802-1812), Huguenot Historical Society, Philip DuBois Bevier Family Papers collection (1685-1910).

*Wages and Prices*: Selected wage and price information taken

from the cash payments section of the ledger during the period 1807-1811 appears in Table 2. During this period, the daily wage paid to workers ranged from 7-8s., a much smaller degree of variation than earlier when wages had fluctuated between 3-10s., with many workers paid 3s., 5s., or 8s. Since the rates paid for similar work varied, the worker's identity and the supply and demand for labor appear to have been important variables in negotiating a wage rate. Slaves sent to work for their masters and free blacks were often compensated at a rate of 3s. per day. However, many of the white workers also earned 3s. per day, and slaves were sometimes paid higher rates.

**TABLE 2**  
**Sample Wage and Price Data 1807-1811**

<u>year</u>	<u>£</u>	<u>s</u>	<u>d</u>	<u>year</u>	<u>£</u>	<u>s</u>	<u>d</u>	
<i>Daily wages – men</i>				<i>Drygoods and clothing</i>				
1807	work in harvest	0	8	0	1807	yard of black cloth	1 16 0	
1807	making bureaus	0	8	0	1808	bonnet for Sally	1 12 0	
1808	work at a cider press	0	8	0	1808	pair boots for Louis	2 8 0	
1808	doing blacksmith work	0	8	0	1808	pair shoes for Louis	0 4 0	
1810	making cabinets	0	7	0	1809	pair shoes for myself	0 11 0	
1811	making board fence	0	7	7	1809	ounce black sewing silk	0 4 0	
<i>Daily wages – women</i>				1810	pound feathers	0	5 0	
1811	spinning	0	1	0	1811	pound indigo	0 1 0	
1811	mantua making	0	2	0	1811	pound cotton	0 4 0	
<i>Payment per job (farm and household chores)</i>				1811	pound cotton yarn	0	6 0	
1807	putting shoes under a horse	0	2	6	<i>Comestibles</i>			
1808	getting a deed acknowledged	0	4	0	1808	gallon rum	0 8 0	
1809	making pair eye gears	0	9	0	1808	pound pepper	0 4 0	
1809	cleaning the clock	0	12	0	1808	pound cheese	0 0 10	
1810	shoeing one horse	0	9	0	1808	pound raisins	0 2 0	
1811	mending a wagon	0	2	0	1808	ounce cinnamon	0 0 6	
1811	mending a wheel	0	3	6	1809	100 clams	0 2 0	
<i>Payment per unit produced (drygoods &amp; clothing)</i>				1809	100 oysters	0	7 0	
1808	weaving	0	0	8 per ell	1810	pound hyson tea	0 7 0	
1808	weaving wool	0	0	6 per ell	1811	pound sugar	0 1 2	
1808	weaving carpeting filled with rags	0	0	9 per ell	1811	bushel salt	0 8 0	
1809	weaving stockings	0	4	6 per ell	1811	87 shad	1 3 6	
1810	fulling	0	0	8 per yard	1811	pound allspice	0 3 0	
1810	carding wool	0	0	6 per pound	1811	gallon madeira	1 6 6	
1810	making shoes	0	5	0 per pair	<i>Miscellaneous items</i>			
1811	making slippers	0	3	0 per pair	1808	pound snuff	0 3 6	
1811	weaving a bedspread	0	10	6 each	1808	iron-axle tree wagon	36 11 10	
					1808	scythe	0 11 0	
					1809	sleigh whip	0 8 0	
					1809	quart clover seed	0 2 0	
					1810	riding chair	80 0 0	
					1811	barrel	0 8 0	

Table 2 shows that the wage rate for females ranged from one to two shillings per day, a fraction of the amount paid to men. A woman paid for making mantuas (shawls) received 2s. per day, but several females who did spinning were compensated just 1s. If these payments were made to adult women, then we find a predictable gender discrepancy in wages. However, it is possible that they reflect an apprenticeship wage paid to young girls. One entry does record an amount paid to a mother for her daughter's spinning, although a daily rate could not be determined since the compensated time period was not specified.

Other types of work were recompensed based on a job rate. Shoeing a horse was one job for which the compensation varied significantly. Wage differentials (2s.6d. and 9s.) paid for this task might have related to the identity of the individual doing the work and/or the number of horseshoes being replaced at one time. Skilled tasks, such as cleaning the clock and making eye gears, were compensated at rates of 9s. or more, compared with less than 4s. paid for various types of mending work. Getting a deed acknowledged cost 4s. The tasks required for the manufacture of cloth were compensated based on quantities produced, measured in ells, yards, pounds, or units. The type of weaving being done was also tied to differences in compensation level as Table 2 shows.

Table 2 also provides information about the purchasing power of labor. With one day's wages, a man could buy a gallon of rum, 100 oysters, or a bushel of salt. It also gives us perspective on the types of goods that Bevier was purchasing for her household, along with some relative price information. The prices reported in the table are simply single examples as many goods varied in price over this period.

Most of the family's yard goods were produced in the home from flax and wool. Cotton was not grown locally and so was purchased, as were indigo, feathers, bonnets, and fancy shoes and boots. To supplement and enhance the grains, fruits, vegetables, and livestock raised on the farm, the family also purchased spices, spirits, tea, and fish. Likely, the shad were caught in the Hudson River, while the clams and oysters were shipped up river from Long Island. The most expensive prices in Table 2 relate to two transportation items – a wagon and a riding chair.

### BUILDING A NEW HOUSE

The property that Philip Bevier had inherited from his maternal grandfather was located along the Rondout creek. The

land and an old house lay on the main road through the Town of Rochester (known today as route 209), just north of the parsonage of the Dutch Reformed Church [Sylvester, 1880, p. 212]. It is not clear whether the idea of building a new residence was conceived before or after Philip's death. In any case, Ann Bevier started building a two-story, stone house on the property within a couple of years after his death. Stone houses were popular during this period, and Bevier's house with its gambrel roof is considered a unique example of this form. The house, as it appears today, is shown in Figure 7. Its vast size suggests that it was a statement of wealth and community standing. A note inscribed inside the back cover of the ledger, dated November 13, 1805, indicates that the family had moved into the new house, dubbed "the seat of content" by John W. Beardsley, the head carpenter. Finishing touches continued to be made to the structure throughout the following year as ledger entries indicate.

### FIGURE 7

#### The Stone House



Source: Photograph by Thomas Stratton

In addition to the stone house, it seems that a frame house was either erected or improved during 1804. The account of carpenter Jacob Rosa shows that he earned 6s. daily for nine days of work on it during the spring of 1804, but only 5s. per day for an additional day and a half of work "the old way." In the spring

and summer of 1805, Rosa earned a daily wage of 8s., working over 50 days, probably on the new stone house. Rosa's account shows that he agreed to provide work prospectively in exchange for the oats and cash that he had received.

Entries in the account of carpenter John W. Beardsley dating from November of 1805 through April of 1807, record the hundreds of days of carpenter's work provided by Beardsley and several journeymen and apprentices. Beardsley and some of the others earned 8s. per day, but a few were paid at lower daily rates of 7s. or 7s.6d. During the harvest, even the carpenters were pressed into service to help with the farm work.

In spring 1806, as the interior furnishings were apparently being completed, Bevier reimbursed Beardsley for some items he had purchased in Newburgh, including a stone mantle, clock case, hinges for the table, screws for the windows, and brass nails for hanging pictures. In August 1806, she recorded in Beardsley's account the cost of painting the house and shingling the barn roof. The debits to his account show that compensation was made primarily in the form of cash.

Several sawmills provided the lumber used for construction, including the one run by Arthur Morris, which was the source of pine lathe, 1¾-inch-thick boards, gutter pieces, and columns for the front stoop. In the fall and winter of 1805-1806, Hasbrouck was a source for items used in finishing the house, including paints, glass, iron, screws, sash cord, and stones for the fireplace and hearth.

Bevier kept accounts for two of the masons who worked on the house, Ebenezer Lattimer and John Brown. Lattimer was a neighbor who was compensated 8s. per day for masonry work. His account was also credited for the work done by assistants who earned from 4-6s. per day. Attesting to our impression of Bevier as a hard-headed businesswoman, she withheld the final payment to Lattimer until he had obtained the lime needed to complete the plastering the following spring. In addition to the masonry work, Lattimer provided other services over time, such as cutting loads of wood and riding his own sleigh and horses. He was also apparently charged with the operation of the brick kiln on the Bevier estate (as noted in connection with Figure 5). A memorandum dated September 9, 1804 indicates that he had taken 43,600 loads of brick out of the kiln.

Lattimer's account shows that he received 8s. daily to cover compensation for John Brown, a mason from Newburgh, who was assisting him. However, Bevier seems to have reached a separate agreement with Brown to pay him an additional 2s. per

day. On other days, Brown worked directly for Bevier at a rate of 10s. and his journeyman earned 8s. Brown was the most highly compensated craftsman that Bevier employed.

Entries in the cash payments journal relate to the construction of the houses as well. In 1804, Bevier paid for boards and 50 loads of stone. Rafters and timber were purchased in February 1805, and the cellar was dug the following spring. Additional boards were purchased, while in July a payment was made to a worker who helped raise the rafters. During September, material for the gutters was purchased, as were hinges and screws, and work on the masonry continued. The purchase of sandpaper for use in engraving the letters "AB" on the cast knocker provides another indication that Ann Bevier may have perceived the new house as a symbol of her status.

### EDUCATING HER CHILDREN

Early American public education immortalized the one-room schoolhouse. By the late 1790s, six were scattered throughout the Town of Rochester [Kyserike Restorations, Inc., 1995, p. 25]. Ann's children would have started their education in one of these schoolhouses but were later sent to Kingston for instruction and thence to schools in Connecticut.

In 1795, the three eldest girls, Esther (10), Rachel (9), and Elizabeth (5) were studying with Isaac French at the local school. French's success as a teacher may be judged by the substantial salary increase granted him by the school trustees the following year [Sylvester, 1880, p. 219]. Ann established an account for French in May 1804 when she had apparently received a bill from him. In the account, she recorded a current payment of about £5, as well as £6 in disbursements she had made to him during 1802 and 1803. During 1804 and 1805, three additional payments, totaling £5, were recorded in the account. Although French was paid in dollars, Bevier recorded the amounts in her ledger in pounds, shillings, and pence.

The children's schooling with Mr. French seems to have been interrupted around 1803. Ann's sister, Hillitje DeWitt, writing to her seven-year-old niece Hylah on March 24, 1803, explained that she was sorry to learn that Mr. French was lame. She encouraged Hylah to learn all she could at home ... and to knit and sew as well, but cautioned her niece against too much running around outdoors lest she develop a tan.<sup>6</sup>

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<sup>6</sup>The letters written by Hellitje DeWitt are part of the Huguenot Historical Society's Levi Hasbrouck Family Papers collection.

The two eldest Bevier girls, Esther and Rachel, were 17 and 16 years of age respectively when their father died. The ledger contains no entries related to their schooling, so their formal education was probably complete at that point. The third and fourth eldest children, Elizabeth (Eliza) and Maria, would have been 12 and 11 years old in 1802. They were then attending school in Kingston, where they boarded with David Delamater. His account was credited £30 in July 1803 for housing the girls for nine months, with an additional credit of 6s. covering the cost of a load of wood for the school. Delamater was paid with 20 pounds of wool, 12 pounds of tobacco, and over £26 in cash. While they were in Kingston, Eliza and Maria apparently received instruction from Miss Kip, who received a cash disbursement of £3.18s. in August 1803 for teaching the girls for three-quarters of the year.

Bevier purchased textbooks from Hasbrouck for her son Louis between 1804 and 1805. As a boy of 10 or 11, Louis' texts included a Greek testament and Greek lexicon, a grammar book, and *Cicero* by Duncan. The three youngest children, Sarah, Hylah, and Louis seem to have been taught by Joseph Perry during 1806. He was paid in May of that year for teaching three children for one quarter (£1.5s.1d.) and again in August for instructing the girls for six months and Louis for five (£2.8s.7d.).

All seven of the Bevier daughters would, in turn, attend the Litchfield Female Academy [Fields and Kightlinger, 1993, p. 115]. Started by Sarah Pierce, Litchfield was one of a small group of early schools that shaped later educational, social, and economic opportunities for American women. Pierce adopted the educational philosophy known as "Republican Motherhood," which argued that women, who had the greatest and earliest influence on children, needed to be educated so that their sons would receive the training necessary to become informed voters in the new republic. Under this philosophy, the intellectual equality of the sexes was recognized, but each gender was assumed to have separate spheres of interests and activities [Brickley, 1993, p. 23].

Students came to the Litchfield Female Academy from a variety of social and economic backgrounds, but most were from upper-class families. During this period of limited advanced educational opportunities for young women, the ability to pay for a costly education was a symbol of wealth. These families sought training for their daughters in the traditional ornamental arts (painting, needlework, music), skills that the girls were expected to pursue throughout their lives. The daughters of less

well-to-do, but educated, families were sent to Sarah Pierce's academy to train as teachers. The students at Litchfield covered a wide range of ages, but most were between 14 and 16. The school's excellent reputation can be judged by the expense, time, and hardships faced by students who traveled long distances to attend [Brickley, 1993, pp. 28-30; Sizer and Sizer, 1993, pp. 8-11].

Pierce, despite the demand for training in the ornamental arts, continuously improved and expanded her academic curriculum, offering subjects rarely available to women such as logic, chemistry, botany, and mathematics. She also encouraged her students to combine their artistic endeavors with the lessons they had learned in history and geography [Sizer and Sizer, 1993, pp. 8-11]. As a result, Litchfield students produced charming needlework pieces and paintings that depicted favorite poems, stories, songs, historical subjects, nature scenes, and current events. Many of these pieces have survived, including several done by Ann Bevier's daughters, which are in the collection of the Huguenot Historical Society. One piece by Hylah is a scene from Sir Walter Scott's poem, "Lady on the Lake." Another is a print-work memorial by Esther, dedicated to her late father, depicting a young woman grieving at a graveside [Krueger, 1993, pp. 90-91].

When Eliza and Anne Maria (Maria) were enrolled in the Litchfield Female Academy, Ann recorded the terms in a memorandum on the back page of the ledger. Dated May 16, 1806, her notation appears at the top of Figure 8. It indicates that for each student, admission was \$1, the cost of board and schooling was \$24 per quarter, music instruction and the use of the piano was \$5, and an additional \$.25 was charged for ink and the expenses of cleaning the schoolroom. At a later date, Bevier added the comment that the girls had not, in fact, learned music. The total admission fee of 16s. was recorded in the cash payments journal on May 31. During this era, the admission fee was due at the beginning of the instructional period while tuition and board were paid at the end. Other disbursements recorded when the girls began attending Litchfield included the cost of transportation to and from Connecticut (over £6) and the cost of various items purchased along the way, including gloves, thimbles, pins, fabric, button molds, and 96 shad. The tolls paid at the different turnpike gates came to 8s.

Louis was also sent to school in Litchfield in 1806, where he attended the Academy at South Farms, a school founded by James Morris at the end of the 18th century. Like Louis, most



of the boys were from out-of-town and boarded with the Ensign family into which Mr. Morris' daughter had married [Trumbell, 1904, p. 229; Calhoun, 1906]. The bottom portion of Figure 8 shows Bevier's note, dated July 2, 1806, in which she recorded the weekly tuition for Louis of \$.25 for English, \$.36 for Latin, and \$.34 for the quarter's academy rent. Ann also noted her agreement with Mrs. Ensign to provide Louis' board and washing for \$1.50 per week. At a later date, she added a note stating that Louis had left school on September 5 for vacation and then departed again on October 21, arriving at school three days later. The school vacations seem to have coincided approximately with the harvest season.

### FIGURE 8

#### Tuition at Litchfield

1806 May 16 Eliza & Anne Maria, went into Miss Pearce's School at Litchfield, in the State of Connecticut —  
 The Terms are as follows, viz: Admision (paid) — \$1 each  
 Board & Schooling, p<sup>r</sup> quarter — 24 — each  
 NB, these } (Music Instruction, use of the piano) — 5 each  
 are the terms } (they did not learn music)  
 for one }  
 scholar } Expenses of cleaning the School Room, ink &c — 25 each

1806 July 2<sup>nd</sup> Louis, went into the Academy, at South Farms in the County of Litchfield, & State of Connecticut, where of Mr. Morris, is the Principal, I agreed with M<sup>rs</sup> Ensign in a place, for his Board & washing, for One Dollar & Fifty Cents p<sup>r</sup> week, Terms of Tuition in the Academy as follows  
 for English, p<sup>r</sup> week — 25 cts  
 for Latin — ditto — 36 cts  
 Academy Rent p<sup>r</sup> 2<sup>nd</sup> — 34 cts  
 The 5<sup>th</sup> of Sept<sup>r</sup> he left the School & returned home, during vacation —  
 The 21<sup>st</sup> of Oct<sup>r</sup> he left home again, & entered the School abt<sup>ly</sup> the 24<sup>th</sup> —

Source: The Account Book of Ann Bevier (1802-1812), Huguenot Historical Society, Philip DuBois Bevier Family Papers collection (1685-1910).

Bevier often did not record amounts in the ledger on a timely basis. The £5 cost of bringing Louis to school in July and the

\$9 (£3.12s.) that she had given him for spending money were not recorded until August 1806. In September, Nicolas van Kott was sent to Litchfield with two horses to bring Louis home. He was reimbursed £2.8s., with an additional 1s.10d. paid for the cost of a public room and contingencies. While he was in Litchfield, van Kott paid Louis' board and schooling for the preceding nine weeks. Mr. Morris received tuition of 15s., while the Ensigns received board of about £6. Cash in the amount of £4 was also delivered to Eliza and Maria at Miss Pierce's school.

When Louis left to return to school on Oct 21, 1806, his mother gave him £1.12s. for expenses. He was again accompanied by van Kott, who would make a \$50 payment to Miss Pierce on October 23. This represented partial payment of the £43 due for boarding and teaching Eliza and Maria for 27 weeks at 16s. each per week. At the end of November, Bevier recorded this total due, along with travel expenses and the cost of several purchases. But, it was not until the following January that she remembered to record the money given to van Kott for accompanying Louis in October or the spending money given to Eliza and Maria the previous May.

In 1807, the youngest sisters, Hylah (12) and Sarah (10) were studying with Joseph Young, who received \$3.40 in March for teaching them for one quarter. Bevier also paid part of the expense of installing window glass in their schoolhouse. That May, Louis came home from school and his board and tuition were paid (£26.16s.9d.). Towards the end of June, Louis, who had just turned 13, returned to Litchfield accompanied by his sister Henrietta Cornelia. She was his senior by about a year-and-a-half, and it was now her turn to go to Miss Pierce's academy. The children were taken to Connecticut by their father's sister and her husband, who received £4.12s. for travel expenses. Each child received spending money, and the purchases made in preparing them for school included a geography text, a parasol, and some fabric.

Louis returned home during September 1807, and Ann recorded his board and tuition for the preceding 11 weeks (£8.1s.4d.). When he returned to school in early November, his mother recorded his travel expenses and spending money, as well as Henrietta's tuition (£2.17s.6d.) and board (£12.18s.) for 18 weeks. Similar entries appeared in subsequent years. In May 1808, the cost of transporting Henrietta Cornelia to Litchfield and returning with Louis was recorded, along with Louis' board and tuition and Cornelia's spending money. When Louis returned to school a month later, he had new

clothes that had been tailored for him in Kingston. In late October 1808, Bevier recorded the board and tuition paid to Morris for Louis (£13.11s.10d.) and to Miss Pierce for Cornelia (£21.8s.8d.). Along with their travel expenses, Bevier recorded the cost of some quinces that had been purchased on route. These must have proved popular with the family as quinces were purchased again the following autumn during the trip to Connecticut.

Louis next attended school in New Haven where he was enrolled at Yale College during 1809 and 1810.<sup>7</sup> His mother's cash disbursements entries show that in January 1809, he took \$40 (£16) with him to cover his board, tuition, and expenses. Subsequent entries for Louis' expenses at New Haven (his mother never mentioned Yale by name) were made in June 1809 (£28.16s.), October 1809 (£40), February 1810 (£22.16s.), and June 1810 (£20). Before Louis left for school in October 1809, over £25 was spent outfitting him with suitable clothes. Subsequently, Louis attended Princeton University and entries related to his expenses there were recorded in November 1810 (£60.16s.), January 1811 (£20), September 1811 (£20), May 1811 (£72), and November 1811 (£66.8s.).

In 1811, it was the turn of Bevier's two youngest daughters, Hylah (16) and Sarah (14), to attend the Litchfield Female Academy. In mid-June, their mother recorded their transportation expenses and the spending money she had given them. When the girls returned home in early November, Miss Pierce was paid £42.2s.7d. for their tuition and board. The Bevier daughters each attended the Litchfield Female Academy for a year or more, and so would have been considered well-educated for women of their era. However, in comparison, Louis received a much more extensive education, including a number of years of college study.

## CONCLUSIONS

The cash receipts and cash disbursement entries in Ann Bevier's ledger run through January 1812, and the account book includes a few entries made in 1813. Whether she continued recording her financial transactions in a new ledger book or

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<sup>7</sup>Correspondence from the Manuscripts and Archives Department at the Yale University Library, dated January 8, 2008, confirmed that Louis D. Bevier was listed as a sophomore in the *Catalogue of the Officers and Students of Yale College* (November 1809) and also listed in the *Catalogue* for November 1810, where it was noted that he had left college.

simply stopped keeping records is uncertain. Between 1809 and 1821, all but one of her daughters married. Her son would continue to live with his mother in the stone house in Rochester, not marrying until after her death. Louis Bevier became a doctor, practiced medicine in Rochester, and, like his father, was active in town affairs, serving variously as school commissioner, town clerk, supervisor, and postmaster [Sylvester, 1880, p. 214; Hasbrouck, 1970, p. 187]. Ann died on October 29, 1834, at the age of 72, having lived out her days in the stone house she had built.

The ledger that Ann DeWitt Bevier kept from 1802 until 1813 represents a rich primary source that provides evidence about how a rural agriculturalist and household head interacted with the social, cultural, and economic environment in the young American nation. It helps us recreate the life of a woman who managed a farm, family household, brick kiln, rental property, and investments in financial instruments, and so extends the literature that documents daily life and culture based on the accounting records of individuals and small family businesses. By focusing on the everyday experiences of individuals and families, we seek to tell a fuller version of history. The personal sources of those who actually participated in history provide perspective on how the economic and social environment shaped their daily lives. Documenting women's engagement in the world of economic exchange conveys the scope of women's activities in the young American nation. It also adds breadth to the nature of activities normally associated with business. By making women visible, we are better able to identify the diverse group of actors engaged in American business during the early years of the 19th century. Finally, we are reminded that accounting is truly an element of culture, shaped to meet differing needs over time and space.

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## STATE AND LOCAL GOVERNMENT ACCOUNTING IN 19th CENTURY AMERICA: A REVIEW OF THE LITERATURE

*Abstract:* Although 19th century America offers a natural experiment in government accounting practices and voluminous original records still exist, a review of the literature on the period's state and local government accounting finds few secondary articles and almost no contemporary literature before 1875. After that, reformers, decrying the municipal accounting practices of their time, wrote profusely so that some secondary studies of that literature exist. The governmental financial records of the 1800s varied in quality from excellent to scandalous and would, if properly sampled and described, not only fill the gaps in our knowledge of 19th century government accounting and fiscal policy, but would also allow study of the causes and effects of many alternative measurement and reporting structures.

In his 2000 presidential address to the American Accounting Association, William Kinney [2001, p. 278, emphasis in the original] argued at length that “the domain of accounting scholarship [is] the *knowledge of the individual and aggregate effects of alternative standardized business measurement and reporting structures.*” However, before we can study the effects, we must know what those structures are. Unfortunately, in the area of government accounting, scholarly descriptive work is scarce. Both Edwards [2000] and Fleischman [2006] found so little material on the subject that no articles found inclusion in their compendia of scholarly accounting history articles.

Turning more specifically to the 19th century history of ac-

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counting by American governments below the national level,<sup>1</sup> researchers have left the subject almost untouched. This is unfortunate because the America of the 1800s was a natural experiment in government accounting. Each state and territory, and often each town or county, chose and developed a means of accounting for its use of the public purse. If we knew more about these practices, we could undoubtedly study some of their effects, which may hold as much interest as the business sector practices to which Kinney refers.

This article is a review of the literature on 19th century state and local government accounting in the U.S. Its purposes are to review that literature, to describe what it tells us about its subject, to comment on the strengths and weaknesses of the literature, and to identify the research opportunities it creates. The paper begins with a methodological note and then proceeds chronologically, starting with the few studies addressing the practices at the turn of the 19th century. Next, the middle six decades of the century are covered quickly since almost no work has been done on that period. The last 25 years of the century, a period in which the literature is copious but preoccupied more by calls for reform than by description of existing practices, are then reviewed. The paper concludes with a discussion of what the extant literature does and does not accomplish, together with a call for scholarship on many topics that the current literature has either ignored to date or for which it has set the stage.

#### METHOD: DATABASES AND TIME PERIODS

An attempt was made to identify all the secondary literature and as much of the contemporary commentary as possible on 19th century accounting by governments in the U.S. below the national level. Databases and indexes searched include: ProQuest's ABI/Inform, the *Accountants' Index; America History & Life*; Dissertation Abstracts International; EBSCOHost Business Source Elite; the *Guide to Reference Books* [Winchell, 1967]; the *Public Affairs Information Service Bulletin* and its related online databases, PAIS Archives and PAIS International; and World-wide Political Science Abstracts. Multiple search terms were used as appropriate for the variety of databases.

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<sup>1</sup>Although the present study does not deal with the accounting methods of the U.S. government, information on that topic is available in a number of sources, e.g., the U.S. Treasury Department [1911] which contains an excellent essay summarizing changes in the official bureaucratic organization of fiscal responsibilities in the U.S. government.



“Contemporary commentary” consists of treatises about the accounting of a period written by observers of the time. These include handbooks and textbooks of accounting techniques, which describe what the authors considered best practices. Also included are descriptions of the accounting methods of the era, often written for the purpose of advocating reform. Such contemporary literature is extremely scarce for most of the 19th century although it grew from a sprinkle to a deluge in the 1880s and 1890s, as will be discussed. The scarcity of literature in the area of government accounting was not duplicated in the private sector. Many bookkeeping pamphlets and treatises were published during the 19th and even the 18th century to help businesses keep their accounts. Interest in bookkeeping was widespread in the private sector, so why the paucity of literature for the public sector?

It was certainly not due to any lack of activity in government financial accounting and reporting. Americans have long believed it is in the public interest for their governments to publish financial reports. In 1819, for instance, the founding fathers of Alabama wrote a provision in the state’s first constitution: “[A] regular statement and account of the receipts and expenditures of all public moneys shall be published annually” [art. 6, sec. 7]. Many other constitutions of new states had requirements nearly identical to that of Alabama.<sup>2</sup>

These requirements bore fruit. State, territorial, county, and municipal governments across the country published financial reports in profusion. As Clow [1896, p. 457] put it more than a century ago: “Material, indeed, exists in great abundance. There are tons of auditors’ and comptrollers’ reports, treasurers’ statements, debt statements...” But until the last few decades of the 19th century, it inspired almost no written commentary. And though a great deal of this primary material still survives today, it has not spawned much modern research either. A goal of the present review is to expose in some detail the gaps in our knowledge of generally accepted government accounting practice in the century before the development of official standards.

The period covered by this review is the 19th century. The early boundary, 1800, is treated a little loosely; materials covering the last several years of the previous century are included. The later limit, 1900, is observed as strictly as the nature of the

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<sup>2</sup>e.g.; Ohio, 1803, art. 1, §§21 and 22; Louisiana, 1812, art. 6, §5; Mississippi, 1817, art. 6, §8; Maine, 1820, art. 5, §4; Arkansas, 1836, art. 7, §3; Florida, 1845, art. 8, §3; Texas, 1845, art. 7, §8.

literature allows. The last few decades of the 19th century and the first years of the 20th saw an outpouring of contemporary commentary on municipal accounting. In the interests of brevity and of a focus on early government practice, literature concerning 20th century accounting is omitted whenever feasible. However, some articles written in the early 1900s about the practices of previous decades are included.

#### 1790s – 1810s

At the turn of the 19th century, a postmaster and judge in Massachusetts named Samuel Freeman [1791] published *The Town Officer*, which included a section entitled “A plain and regular method of keeping town accounts, upon an inspection of which, the state of its finances may at any time be known.” The book went through eight editions from 1791 to 1815 [Wenzel et al., 1992, p. 60].

*The Town Officer* is currently the main evidence that, by 1800, some sophistication in state and local government accounting had developed in the U.S. Freeman advocated double-entry techniques and a degree of budgeting. He advised tracking public funds through 17 accounts, from appropriations through collections and expenditures to year-end closing. Freeman concluded with a call for public accountability: “[...]t every annual March or April meeting, the selectmen should exhibit to the town a state of their accounts, having previously settled with the treasurer, and examined into the state of the collector’s bills” [Bain, 1964, p. 133].

Several secondary studies rely on *The Town Officer*. Bain [1964] compares the superiority of Massachusetts accounting to the cruder single-entry, three-account system advocated in a Connecticut pamphlet of the 1790s. Holmes [1979; see also, Holmes et al., 1978] analyzed *The Town Officer* and discovered a description of a Boston citizens’ audit committee that, in 1798, required the separate appropriations accounts to be integrated into the town ledger accounts. The stated purpose was “so that in future the Town may know which & how much they fall short of the Sums granted” [Holmes, 1979, p. 54]. In the mid-1980s, *The Town Officer* was re-discovered and Wenzel et al. [1992, pp. 57, 71] approvingly note Freeman’s understanding of “the fiduciary relationship of government to its citizens.”

Thus, there is evidence of sophisticated government accounting in Massachusetts as the 19th century dawned. All the writers discussed so far agree on this point, but Holmes [1979,

p. 48] goes a step farther and speculates why it was so. He points out that the colony of Massachusetts began as a joint-stock company in the early 1600s. From the beginning, the company presented accounts to stockholders. “[M]uch of the old business relationship,” Holmes argues, “carried over to the structure of the Civil government.” From this promising start, Massachusetts’ public sector accounting improved over time as observed at three points in the century preceding independence. By the end of the 1700s, Holmes concludes, both state and local accounting practice in Massachusetts had culminated in the double entry, journal-and-ledger, budget-integrated records evident in the Boston records and described in *The Town Officer*. Note that *The Town Officer* and the secondary literature based on it are the only publications this reviewer was able to locate for the early national period. What may have been happening in the rest of the country in public sector accounting at that time is unknown.

#### 1815 – 1875

If the above studies barely lift the curtain on turn-of-the-century government accounting practices, they are followed by almost nothing at all in the next six decades. The spring 1978 *Government Accountants Journal* carried a promising title: “The Evolution of Governmental Accounting, Reporting and Auditing in Michigan – 1835 to 1977” [Gregg, 1978, p. 62]. Unfortunately, the only information Gregg provides on the first century of that period is that Michigan had an auditor general whose duties were so comprehensive as to preclude “an adequate system of internal control.”

Similarly, Potts’ dissertation [1976] essentially begins with the 1870s. For earlier years, he mentions only that New England town meetings appropriated money and levied taxes, that the states rather than the federal government regulated the cities (unlike the practice in England), and that cities followed a variety of methods of selecting financial officers.

Herbert [1971, p. 434] briefly declares that all antebellum accounting, including public sector books, concerned only record keeping and fraud detection, as opposed to management analysis, but he provides no evidence to support this claim. Previts and Merino [1998, pp. 95-97, 167-168], in their history of American accountancy, mention that around the Civil War, states and fast-growing cities had to learn to account for new taxes, large new expenditures, and rapidly increasing regula-

tions. But the authors find very little literature on this period to include in their history. As Previt and Merino understate it, “[t]he financing and fiscal administration of the growing cities and towns during this period is less than well documented.”

Note that none of the sources so far cited for this period specifically describes state and local government accounting techniques. In fact, the only specific discussion of mid-century practices that this author located is not in an accounting source at all, but in an economics article. In the 1980s and 1990s, economic historians Sylla et al. [1993, 1995] drew on state treasurers’, auditors’, and comptrollers’ reports to create a large database of 19th century state and local fiscal data.

In addition to reporting the financial data, Sylla et al. [1993, pp. 8-10] describe the quality of the records. They find great variety in public sector accounting methods for the period. Fiscal periods differed by state and over time, ranging from nine to 24 months. “Revenues” included the proceeds of loans in some states, sometimes all loans and sometimes only short-term instruments. Maryland counted its share of the federal surplus distribution in the 1830s as revenue the year it was received and again the next year when it withdrew the money from the bank. The State of Washington used a “horribly convoluted” 30-fund accounting system. Some states, Iowa and Washington “the two most egregious offenders,” measured revenues and expenditures differently. Revenues were on a cash basis, according to the authors, while spending was reported in the form of interest-bearing warrants.

In the U.S., the only source of information about the public sector accounting practices of the middle decades of the 19th century was published in the economics literature by Sylla et al. [1993], as just noted. Similarly, Bain [1964, p. 130], writing in the *Canadian Chartered Accountant*, notes that “early treatises were often contained in works that were not primarily concerned with accountancy.” Bain had to tap the early political science/government literature for historical coverage of government accounting.

#### 1875-1900

With the dawn of the Progressive era, the dearth of attention to public sector accounting ended. Articles poured out of accountants’ offices across the country in the late 1800s, mostly concerned with the reform of municipal accounting. Accountants of a Progressive persuasion hoped to find in government

regulation an antidote to what they saw as the corrupt power of corporations. They sought cleaner government as a prerequisite for such regulation. But not all accountants regarded curbing the private sector as the goal of reforming the public sector. A different view was espoused by Elijah Watts Sells [1908, p. 59] at a banquet of the New Jersey Society of Certified Public Accountants:

[I]t is the unassailable truth that almost any one of the men who stand at the head of our great business institutions is far more competent to run the Government, and would run it more economically, more wisely, and more honestly than any of those who are in the business of running governments.

I know as a matter of fact that the management of our great properties is generally intelligent and economical, and that the management of our Government bureaus is generally loose, irregular, and frequently dishonest;...

Sells knew whereof he spoke. As one of the founders of Haskins & Sells (now Deloitte), he had personally evaluated the books of many companies and governments. His speech was intended to be provocative. It was not what Sells said about government officials that was so controversial – muckraking was a favorite pastime of the period. What was controversial was his claim that private corporations were more honest and competent than government.

Whether their politics were traditional or Progressive, accountants across the country threw themselves into the reform of government financial reporting in the last decades of the 19th century. Intended to effect changes in how governments accounted for the public purse, their profusion of articles were generally more polemical than descriptive. Recent scholarship has used this literature to guide research on turn-of-the-century government accounting. The review of the 1875-1900 period which follows will deal with both the copious contemporary literature and the secondary research based on it.

*Scandals:* The accounting writers of the last two decades of the 19th century and first decade of the 20th were not unbiased. They had a reform agenda which strongly colored their views of the government accounting practices of their time. Yet, they also provided their interested descendents with first-hand information on the accounting practices of the late 1800s.

In a famous example of such muckraking, Charles Waldo Haskins [1901] lamented the scandalous municipal bookkeeping practices his firm had found when conducting a 1900 audit of Chicago's books [see also, Cleveland, 1903; Previts and Merino, 1998, pp. 169-170]. In Cook County, there were perhaps 317 tax-levying entities. Town collectors delayed remitting collections to the city, which borrowed money while waiting, and sometimes kept more money for their own pay than the law allowed by a factor of three. Collectors' reports of unremitted taxes were not audited; receipts were often reported late and not audited or itemized; and special assessment accounts went unposted for five years in the 1890s. A previous auditor had found half a million dollars missing from the special assessments fund. He also found a vault containing a jumbled mass of bonds and interest coupons for the city. According to the *Engineering Record* ["Municipal Accounting," 1903], Chicago trust funds had been raided for operating expenses; the balance of collections for school taxes was unknown; departmental books did not balance with the controller's books; the controller was forbidden to investigate before authorizing disbursements; various funds were commingled; and the special assessment books of original entry were regularly destroyed.

Chicago was not alone in shoddy bookkeeping, according to accountants from other cities. The secretary of the Boston Statistical Department, Edward Hartwell [1899, p. 129], studied the financial statements of a number of cities at the end of the 19th century. He considered the quality of the municipal books very poor. They contained "ill-digested" material; covered too short a period (only one year); failed to sum column totals; failed to give percentages or ratios; inadequately recorded capital, loans, and liabilities; failed to list all employees; and almost entirely neglected capital improvements and repairs. The secretary of the League of Wisconsin Municipalities [Sparling, 1899] came to a similar conclusion about his state's municipal accounts. Department and activity accounts were commingled, inter-departmental services were not tracked, debt was neither completely listed nor was the city's ability to service its debt, and terminology was not uniform. In Milwaukee, according to another writer [Winkler, 1895, p. 120], the aldermen controlled the funds for the public works of their wards. In Portland, Oregon, accounting was so lax and the public so inattentive that few knew what the tax rates were, invoices were paid for goods not received, over \$300,000 of public funds were lost in bank failures, and contracts were overpaid to employers who could deliver votes

[Strong, 1895]. Clow [1896, p. 457] explained the general problem with the municipal financial records of the time vividly:

[The material's] crudity is appalling. City documents seem compiled to meet the requirement of the law or to make a job for the city printer, – anything except to give intelligible and desirable information....each state has its municipal system....Thus...we have a myriad of financial systems to take into account.

*Municipal Accounting Reforms:* In addition to writing muckraking exposés of public recordkeeping, late 19th century writers filled many pages proposing detailed improvements. Their focus was clearing out corruption and confusion in the cities. Other levels of government received much less attention.<sup>3</sup> In 1894, the National Municipal League (NML) was founded. It was a roaring organizational success. Within six years, hundreds of organizations somehow affiliated with the NML had appeared across the U.S. [Fleischman and Marquette, 1987, p. 297].

The published proceedings of NML annual conventions contained a profusion of articles decrying municipal corruption and praising or proposing reforms.<sup>4</sup> Typical of the genre is a 1908 article by the auditor of the District of Columbia, Alonzo Tweedale, in which he described the D.C. accounting system created by Congress in the 1870s and 1880s. He found the accounting rendered difficult by the fact that D.C. monies, technically funds of the U.S. government, were commingled with national government monies in the books. Nevertheless, because of the attention of the federal government to the District, the chart of accounts was modern, transactions were booked promptly, appropriations and revenue accounts were integrated with expenditures and collections, a daily cash flow statement was maintained, and a daily statement of funds from the U.S. Treasurer was kept. Furthermore, the District had made an important technological improvement – loose-leaf ledgers, which allowed the subsidiary account expenditures to be summarized easily and balanced to the monthly control account.

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<sup>3</sup>This focus on cleaning up municipal government was typical of the Progressive movement in general not just its accounting branch. Interestingly, a similar effort at reforming municipal administration and accounting occurred at about the same time in England [Jones, 1989].

<sup>4</sup>From 1897 to 1910, the series was titled *Proceedings of the...Conference for Good City Government and of the ... Annual Meeting of the National Municipal League*. (Note that articles from this series are cited in the reference list under the names of the relevant authors.)

Fleischman and Marquette [1987] found that Ohio cities were early adopters of Progressive-era accounting reforms, including uniform accounting methods, central municipal purchasing, and budgeting. The Cincinnati and Dayton Bureaus of Municipal Research promoted cost accounting reports, double-entry bookkeeping, and monthly expense and revenue reports [Fleischman and Marquette, 1988]. Contemporary Ohio writers believed the cities to be in desperate need of such improvements. The president of the Cleveland Civic Federation [Blandin, 1895, pp. 112-113] described the city government before 1887 as “a growth, not an organization.” Fiscal power was so decentralized that “no system of accounts of city affairs was possible.” Invoices were sometimes paid twice and sometimes paid even though no goods had been received. Cash was scattered among numerous hands and corruption, in the opinion of the president, was everywhere.

In 1887, Ohio began a massive municipal reform, inspiring much commentary among accountants. Blandin [1895, pp. 113-115], at the NML's first meeting, noted that cities had to establish a department of accounts to handle all bookkeeping, city councils had to approve all contracts over \$250, and some separation of financial powers was required. At the fifth meeting, Kibler [1899, p. 192] observed that the accounts department head had to submit detailed annual reports to the mayor and the auditor. Despite these efforts, a former auditor for Cleveland [Crosby, 1899, p. 153] deplored the habit of “many of our larger municipalities” of delaying the publication of annual financial statements for as much as a year.

As for other parts of the country, the Minneapolis city attorney [Simpson, 1895] wrote of new charter limits on tax levies and bond issues, which resulted in very low debt. In St. Paul, W.H. Lightner [1895] noted approvingly that expenditures in each department were made by debt certificates, redeemed the following year with tax collections. Taxes were levied to cover the needs of specific funds and could not be used for another fund. The mayor of Chattanooga [Ochs, 1895, pp. 397, 404] praised his city's financial management, which he attributed to “a proper spirit among the authorities” rather than particular regulations. As a consequence of this conscientiousness, wrote the mayor, Chattanooga's per capita expenditures were \$7.75 in 1890, as opposed to \$18.86 in San Francisco and \$15.43 in Richmond.

San Francisco had a “one-twelfth act” which limited monthly expenditures from any fund to one-twelfth of the amount



appropriated for the year. This reform did not operate perfectly, observed I.J. Milliken [1895], as some vendors stopped deliveries in the last two months of the fiscal year because some of their invoices had been outstanding for two years. In New York, F.W. Holls [1896] was especially impressed by the 1895 establishment of a state board of municipal control with the power to dictate uniform accounting for all cities with populations under 250,000 and to vet the details of all bond issues. Powers [1905, p. 257], a Census Bureau statistician, observed approvingly that New York State also began supervising county trust fund accounts in 1892, leading to standardized bookkeeping.

State and local government budgeting may have originated or become more common in this period although on this point, the literature is divided. Marquette and Fleischman [1992] noted that there was some discussion of budgeting before 1900. Clow [1896, pp. 458-459] argued that cities were the only governments in the U.S. that “prepare[d] genuine budgets” – the states and national government did not have to since they either raised taxes or ran deficits as necessary. This contradicts Potts [1977], who finds no evidence of government budgetary accounting in this country before the 20th century. Supporting Potts, Allen [1908] claimed that New York only began its use of budgeting in 1906.

One of the most popular reforms of this period, strongly backed by the NML, was the push for standardized accounting and financial reporting by local governments. In 1899, the NML published a model city charter with a proposed uniform accounting system and specific controls for municipal debt, franchises, and contracts [NML, 1899, pp. 220, 230-233].<sup>5</sup> Two years later, the NML set up the Committee on Uniform Municipal Accounting and Statistics [Hay, 1996, p. 553].<sup>6</sup> One of the main creators of the proposed system was Frederick Cleveland [Matika, 1988], who favored accrual-basis accounting for cities rather than the cash-basis accounting that he found prevalent [Cleveland, 1904].

Numerous organizations joined in the campaign to standardize municipal accounting [Baker, 1900]. The American Association of Public Accountants, a predecessor of the AICPA,

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<sup>5</sup>See Rowe [1899] for a detailed explanation of the proposed accounting system, including a chart of accounts. For an NML committee description of the municipal evils standardized accounting should help cure, see Wilcox [1899, pp. 51-54].

<sup>6</sup>A predecessor committee had started operations in 1897 and had produced a working plan of municipal accounting by 1898 [Hartwell, 1905].

began publishing the *Journal of Accountancy* in 1905, which included, nearly from the beginning, occasional articles on municipal accounting and the need to standardize it [Previts and Brown, 1993]. The Association of American Government Accountants (AAGA) began publishing *The Government Accountant* in 1907. At first it covered only the federal government. However, LeGrand Powers, the chief statistician of the Bureau of the Census (BC) [Powers, 1909], was an early AAGA president. The BC had begun collecting details of state and local government finances in 1880, a Herculean task. Under Powers' leadership, the journal soon began advocating uniformity in public sector accounting practices.

The BC itself also published essays on the quality of state and local government accounting in the early 20th century. Based on its experience trying to collect and report comparable statistics for all the states, a 1907 special report and a 1915 essay [U.S. BC, 1907, pp. 3-35, 131-216, 613-844, 953-974; 1916, pp. 11-60] provided extensive, systematic information about turn-of-the-century differences in the states' handling, recording, and reporting of public monies, as well as their taxation and property valuation systems. Many differences were noted in these reports; for example, some states allowed offices other than the treasurer's to collect and spend public funds. Some states recorded trust fund expenditures in the trust funds themselves; others simply passed the money through to the general fund, where it was finally spent. In some states, private trust fund obligations were classified as state debt, while in others such obligations were not. Some states used modified accrual-basis accounting, while others used "antiquated" cash receipts and payments only. Some states collected local governments' revenues and passed them on to the counties or towns; elsewhere, the counties collected all money and forwarded the state's share to the capital [U.S. BC, 1916, pp. 11-14].

These and other differences between the states are what make research use of early state and local records difficult. Certainly the differences rendered the job of the BC gargantuan. In its own defense, the BC [1907, pp. 953-961; 1916, pp. 15-28] developed and published detailed definitions of government accounting terminology. These definitions, which the state and local governments were forced to recognize at least minimally in their reports to the BC, contributed to the early 20th century development of uniformity in public sector reporting and generally accepted government accounting practices. Powers [1905] ardently advocated uniform accounting due to his experience

in trying to create comparative reports for the cities and states from very diverse books. The BC essays and the articles by Powers are probably the most systematic and detailed information available about turn-of-the-century government accounting in the U.S.

General acceptance of these nascent government accounting standards advanced state by state and often city by city. According to Powers [1907, p. 256], the movement for uniform public sector accounting started in Minnesota, long before the NML was created. An 1865 law required Minnesota counties to publish annual financial statements containing specified information, and an 1878 supplement required the state examiner to be an accountant with the power to force the counties to comply with correct bookkeeping. Within ten years, Powers noted, financial administration had improved so much that the counties' new interest income more than equaled the examiner's salary. Massachusetts followed with similar reforms in 1879 and 1887, eliminating customary "gross abuse of the fee system" by county officials (presumably bribes).

Reform headed west about the same time [Hartwell, 1905, p. 210]. In 1892, Wyoming placed an examiner over the state and county accounts to make sure they were kept current and uniform. H.B. Henderson [1900], the state examiner, averred that whereas once only two Wyoming counties had kept within their budgets, by 1899 all did so. Indeed, so much more efficient did government become that expenses dropped significantly despite a population increase. Both the Dakotas followed the Minnesota and Wyoming lead [Powers, 1907].

Powers [1909, p. 26] was able to report by 1909 that about one-third of U.S. cities with populations over 30,000 had made substantial progress toward uniformity by using the BC account classifications. The other large cities had made some progress, while smaller towns continued in their old ways. By contrast, Marwick, Mitchell & Co. [1908, p. 216] took a rather gloomier view that "no properly defined system of accounting [was] in use" in cities as of 1908, a terrible situation given that "the management of a city can be judged in a very large measure by the books it keeps."

Two articles by NML members [Chase, 1904; Woodruff, 1908] generally agreed with Powers' account of the movement for uniform municipal accounting. State legislation beginning in Minnesota and Massachusetts in the 1870s imposed some uniformity on counties. More state legislation and the censuses of 1880 and 1890 extended the movement to some cities by the

1890s, when discussion of the need for uniformity was widespread and the NML formed.

According to Chase [1904, pp. 39-40], a pre-eminent municipal accounting expert [Previts and Merino, 1998, p. 178], in the beginning of the standards movement:

the prospect for uniform municipal accounting was... sufficiently discouraging...and it was only by leaving uniformity of *accounting* severely alone for the time being, and devoting all available energies to the simpler side of the question, namely, uniform municipal *reports* based upon a re-distribution of the city treasurer's accounts at the end of the year – this re-distribution being made upon uniform and comparative schedules – that any progress could be achieved (emphasis in the original).

Chase credited the U.S. BC with motivating a great deal of the change in attitudes toward uniform reporting among state and local officials because of the its requirements for periodic comparable accounting. In the late 1890s, the NML proposed model uniform municipal accounting, but this remained just a proposal at century-end.<sup>7</sup>

It should be noted that not everyone thought uniformity the cure for the era's municipal scandals. The secretary of the Louisiana Ballot Reform League, W. B. Spencer, told the NML in 1895 that the centralized financial regime under Reconstruction had seen such terrible corruption that a new charter was enacted in 1882 decentralizing power. This had led to even worse corruption. The solution lay in ballot reform, he believed, not uniform accounting.

*Municipalization of Public Works:* One of the hottest debates in municipal finance reform at the turn of the 20th century was how to clean up the city franchises. Political machines notoriously granted the franchises for road construction, street car service, sewage, and so forth to favored companies in exchange for votes. The preferred Progressive solution to this problem was the “municipalization” of public works; that is, the cities would

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<sup>7</sup>The model system was adopted by many cities over the early decades of the 20th century [NML, 1899; Rowe, 1899; Hartwell, 1902]. By 1913, Indiana's director of municipal accounts reported that 28 states had implemented uniform systems of accounts for at least some of their state and local entities [see “State Supervision of Municipal Accounts,” 1913]. Nevertheless, uniformity was still not universal in the 1980s [Ingram and Robbins, 1987].

simply seize ownership of the works and run them. This plan had many opponents also. At the NML, the argument turned heavily on the accounts.

NML vice president Charles Richardson [1896, p. 200] argued that municipalization would provide much better service at far lower cost, would give the voters every reason to monitor closely the activities of the officials in charge, and would finally overthrow the spoils system. It would, in short, “rescue our cities from the slimy, paralyzing folds of these corporate anacondas.” Edward Bemis [1895, pp. 125, 127] of the University of Chicago agreed that governments should own “local monopolies” and also argued for “[c]omplete publicity of accounts, with the power...in the city auditor...to prescribe methods of bookkeeping.” For years, Cleveland [1909, p. 218] held that municipalization demanded uniform and high-quality government accounts as a prerequisite.

Loomis [1896, pp. 208, 210-211], on the other hand, vehemently opposed municipalization on the basis of “the time-worn, but time-honored, argument against all socialistic schemes.”<sup>8</sup> He argued that the cost might not be lower, despite the “all but innumerable” statistics showing them to be so, because these accounts normally failed to include any charges for the physical plant, interest, repairs, legal costs, and taxes. The president of the National Electric Light Association [Cahoon, 1900], a commentator from Massachusetts [Allen, 1899], Robert Montgomery [1904], and a law professor from the University of Illinois [Tooke, 1899] all agreed with Loomis that reasonable cost and profit calculations for public service entities needed to include all the costs that appear on the books of private companies. Accounting for these activities should, in today’s terms, be on a full accrual basis and should follow private sector GAAP.

But the theory and practice of public works accounting diverged in the 1890s. Professional accountants agreed on the principles, but in at least one case where municipalization had already occurred, costs were still understated. In Philadelphia, the city owned the gas works. It ignored depreciation in calculating the necessary tax rates, and, by 1897, the works were completely dilapidated, leading to a scandal and a demand for good accounting for public works [Rowe, 1899]. These writers were

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<sup>8</sup>This was the height of the Socialist Party’s influence in the U.S. Socialists won hundreds of local elections in the early 1900s and, in 1912, Eugene Debs, the Socialist Party presidential candidate, won 6% of the national popular vote [Braunthal, 1997; Ginger, 1997].

debating whether to use enterprise-type accounting for these enterprise-type activities.<sup>9</sup> This Progressive-era political debate over the ownership of public works may have begun the serious consideration of separating commercial from government activities in American public sector accounts.<sup>10</sup>

*General Commentary:* Turning from reformers' polemics to more general studies of the public sector accounting of the late 1800s, one finds that broad contemporary commentary, like that of the BC, was quite scarce. E.S. Mills published "Public Accounts" in St. Paul in 1878, a short pamphlet that Potts [1976, pp. 49-51; see also, Bain, 1964, p. 132] believes was the "first treatise of public accounts in the United States." Mills criticized the cash basis that he said governments generally used and proposed a new system based on either double or single entry.

Clow [1896, pp. 460, 465] acknowledged that cities often published statements of assets and liabilities at century-end. However, he was appalled by most cities' "worthless" financial reports, which often consisted of a simple list of expenditures, extending for hundreds of pages if necessary. Boston published the best reports he had seen, but, even in that city, the mayor complained that he could not get a report that told him the annual costs of the city's departments.

It is interesting that Clow found Boston's accounts superior at the end of the 1800s, just as Holmes [1979] finds them to have been at the end of the previous century. Other Massachusetts cities also seem to have been better at financial reporting than their contemporaries. According to Powers [1906, p. 211], in the early 1890s when his office was first collecting municipal finance data around the country, almost the sole exception to the rule of "cold indifference and contempt" to the task on the part of municipal officers was the auditor of Cambridge. Powers used the Cambridge schedule as the model for reports required from other cities.

Unfortunately, general commentary on turn-of-the-century state or local government accounting is still scarce today, and

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<sup>9</sup>See also, Cleveland [1904]. The use of enterprise-type accounting in the public sector has been debated for many decades. See, for example, Pool [1948] and Monson [2002].

<sup>10</sup>Note that Monson [2002, pp. 40, 43] dates the beginning of the debate somewhat later, around 1910. In England, Jones [1989, pp. 60, 64, 65; see especially, p. 69] dates it to the first decade of the 20th century. There, the question was the privatization of municipal services, and it turned on the allocation of overhead and depreciation expense.

most of it relies on 19th century authors' descriptions of the accounts then kept by the governments. For example, Potts [1976], who discusses the subject briefly, relies mostly on Mills' 1878 pamphlet and Chase's 1904 article. Previts and Merino [1998, pp. 167-173] seem to base their brief coverage on Potts, Mills, and some of the Progressive reformers mentioned in this review. Fleischman and Marquette [1987, 1988] and Marquette and Fleischman [1992] also use the Progressive-era reformers in their work. Thus, modern secondary studies all ultimately rely on 19th century authors' views of contemporary practice. At the turn of the 20th century, most writers were grinding some big reform axes. It is hard to tell from their writing what the state of public sector accounting actually was, and, thus, difficult to diagnose the degree to which their biases have colored today's historiography.

## DISCUSSION

*Comments on 19th Century Practices:* At the beginning of the century, we know that rather sophisticated accounting and reporting practices existed in at least one Massachusetts town, while a few towns in Connecticut had much poorer techniques. For the six decades from 1815 to 1875, we know that the states had different fiscal years, and that some of them misclassified payables as revenues, double-counted revenues, and used different measurement bases for revenues and expenditures. The 1815-1875 information comes to us from economic historians, not accounting scholars. That is all the literature tells us about the first three-quarters of the century, and it is very little.

We know more about the last 25 years of the century, though still not much, because accountants wrote a great volume of contemporary commentary in those decades aimed at the reform of municipal accounting. Specific scandalous practices in a few dozen cities are recorded, as are improvements that were implemented in a handful of them. State-level financial controls probably improved over the period. Many contemporary writers detailed what they thought good municipal accounting and reporting should be, and the NML proposed a uniform system of municipal accounting that had wide acceptance. The need for enterprise-type accounting for municipal utilities was debated. Some of the governments may have used a form of budgetary accounting. The BC, in the interests of imposing uniformity on the state and local governments' reports, published informative and systematic comparisons of some of the different practices

among the states. In a small step toward such uniformity, some of the larger cities began using BC account classifications toward the end of the century. Except for the BC's work, most of the information about this period concerns the accounting by cities.

Two observations may be made concerning the 19th century's public sector basic financial records. First, it is remarkable how copious they are. There are "tons of" these records, as Clow [1896, p. 457] acknowledged over a century ago. This suggests that American state and local governments were widely expected to be financially accountable to the people who supported them, a point ignored by Progressive reformers. Second, the effectiveness with which the governments met their public accountability obligations varied from excellent to scandalous over the whole century. There is some evidence that Massachusetts governments did a better job than most others throughout the period. Based on this review of the literature, we probably do not have enough information to draw other general conclusions about the century's public sector accounting.

*Historiographical Comments:* The literature produced about an era's accounting may be divided into that written contemporaneously – bookkeeping manuals, articles, and the like – and that written in a later era – secondary studies. These historiographical comments will focus on the secondary literature.

Accounting historians have almost entirely ignored America's 19th century state and local governments. Fewer than two dozen articles, by the most generous count, have been written on the subject. As a result, today we have, to paraphrase Kinney [2001, p. 278], very little knowledge of the 19th century's alternative standardized governmental financial measurement and reporting structures.

The few studies that have been done, while interesting and informative, derive their knowledge of the period's practices from the work of 19th century authors. This material, one step removed from the actual accounting of the time, is not ideal. In defense of accounting scholars, the original books and reports of the governments of the 1800s, while ubiquitous and voluminous, are difficult to use as they are geographically scattered and thoroughly non-uniform. By contrast, the contemporary treatises are relatively concise and more generally applicable than any given primary source document. They resemble modern authoritative standards in that they instruct the reader in what is believed to be generally accepted practice. They are based



on first-hand knowledge. In short, contemporary literature is a partly digested primary source.

Nevertheless, the neglect of the basic primary sources is a weakness of historical scholarship on the public sector. Interestingly, the neglect is not duplicated in studies of the private sector. Primary materials for the private sector are spotty, non-randomly distributed across businesses and often crude. Furthermore, handbooks on business bookkeeping were much more common in the 1800s than were manuals on government bookkeeping. Yet, historians of private sector accounting do not confine themselves to the contemporary manuals; they also consult the original books of the periods they study.

Note that there is an enduring pattern of neglect in the literature concerning public sector accounting. Before the 1880s, very few handbooks or articles were written on the subject. Since it is the availability of such literature that drives the subsequent scholarly attention, almost no research has been done on government accounting in the U.S. during most of the 19th century. Neither today's accounting scholars nor the writers of the past have ever been as interested in the business of government as in the business of the private sector.

This relative disinterest has a number of consequences. First, we have created a vast period of ignorance of how governments accounted for the public purse in the first 75 years of the 19th century. Second, even for the Progressive decades at the end of the century, our secondary research is necessarily colored by the political agendas that impelled the 19th century accountants to write so prolifically. Most of the articles and books they wrote decried the low quality of the accounts and agitated for change. How accurately do they describe the practices of the time? Without consulting the original records, we cannot be sure. Even when the goal was simply to describe what was then seen as correct procedure, as in Mills' 1878 pamphlet, contemporary practice diverged from the prescriptions to some unknown extent. Third, because we do not consult the original documents and because few writers of the 1800s were interested in the states, we have little knowledge of state practices for any part of the century.

A final consequence of the historiographical neglect of public sector accounting is that we know nothing of the development and spread of nascent generally accepted government accounting practices in the 1800s. Nationally accepted authoritative standards for state and local governments did not develop in the U.S. until well into the 20th century. Some observers there-

fore conclude that the subject had no history before 1900. Figlewicz et al. [1985, p. 74], for example, assert that “[s]ince little in the way of nonbusiness accounting systems developed earlier than the turn of the century, the history of governmental...accounting can be considered to have begun around 1900....”<sup>11</sup>

Shyam Sunder [2006a, slide 14], 2006-2007 president of the American Accounting Association, referred to this sort of reasoning, pointing out that it is tempting “to identify the history of accounting with the organized efforts to produce written rules” because “[s]uch efforts leave documentary traces for historians” to study, whereas norms, “even if they are widely accepted, leave nary a footprint, except in fiction.” Accounting historians, who know better, need to produce studies to refute the strange notion that American government accounting history began with the NML and Progressivism.

#### FURTHER RESEARCH

*Basic Description:* This review suggests the need for considerable descriptive work into the accounting and reporting methods used by different governmental entities in the U.S. in the 1800s. Financial documents and bookkeeping techniques in many places at many different times need to be described in detail. This work must precede histories of specific topics and the testing of various theories using historical data.

But this is an opportunity, not a problem. Accounting historians working on the public sector are in a position similar to that of Carolus Linnaeus, the 18th century botanist whose taxonomy of living creatures to this day informs scientific classification, or that of 21st century geneticists, whose databases of genetic sequences will provide the data for generations of future scientists. Fortunately, the primary source data for governmental accounting are not so difficult to acquire as in botany or genetics. An expectation of accountability made the publication of governments’ financial records quite common in 19th century America, as is undoubtedly the case in a number of other countries. Many of the books still survive in municipal, county, and state archives across the country, often right down to the handwritten books of original entry.

Indeed, the proportion of the original public sector records that has survived to the 21st century is probably much greater than the proportion of records of for-profit concerns. It is far

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<sup>11</sup>For a similar argument, see Remis [1981].

more likely that the financial records of any given governmental entity of the 19th century still exist than is such survival for a particular private business. It may therefore be possible to use systematic sampling techniques, even random sampling, to identify a group of governments whose practices could then be classified in a descriptive rubric. Researchers might thus create a historical version of *Local Government Accounting Trends and Techniques* [Cornwall, 1988], showing with reasonable accuracy the range and frequency of 19th century government accounting practices.

As discussed earlier, previous studies describing some of the primary sources have been published by the U.S. BC [1907, 1916], whose essays cover some of the variety in techniques across the states. Also, a group of economic historians [Sylla et al., 1993] wrote a brief essay on the quality of a large group of state and municipal reports they had examined. But, while people in other disciplines such as government practitioners and economists have provided useful information, it is not their primary purpose to investigate the history of accounting or to discuss its implications. Accounting historians need to look at the state, county, and town books themselves.

*Causes and Effects:* If adequate systematic description is done of the government accounting of the 1800s, there could be enough data to conduct quantitative research on many questions of great interest. What, for example, are the causes of the variation in accounting and reporting techniques over time and across governments? The secondary literature already touches on the subject with William Holmes' speculation [1979] that the colonial origin of Massachusetts as a joint-stock company explains its superior financial reporting. Could it be that the 19th century accounts of the first 13 states differ in quality by their original status as a proprietary or a royal colony? An alternative hypothesis is that states with well-established, powerful commercial economies kept better fiscal records. Perhaps in Louisiana, Massachusetts, and New York, antebellum government accounting was better than the accounting in Kentucky, North Carolina, or Vermont.

Perhaps the difference in accounting sophistication is most distinct across regions, in frontier versus settled areas, in regions settled by the English rather than the French or Spanish, between states with strong versus weak executives, or as a function of population size or levels of wealth. With enough data for quantitative work, historians could chronologically expand

studies such as Zimmerman's [1977] which uses modern data to test agent-principal explanations for municipal reporting variations, or the work of Sneed and Sneed [1997], who examined the creation of fiscal illusions by states with higher levels of spending. State and local governments developed nascent generally accepted accounting practices in the 19th century; it might be possible to study the effects of those developments. What is known now is that the quality of public sector accounting varied enormously in the U.S. of the 1800s. This variation and the large number of governmental entities should make positive research on causes and effects possible.

*Other Historical Topics:* A systematic database of 19th century practices would also provide information for any number of non-quantitative studies that would fill the vast gaps in our knowledge of state and local government accounting. The ever-popular story of standards development, for example, would be an obvious beginning. Sunder [2006b, p. 2] points out that the drift to formal standards began in U.S. private sector accounting about 75 years ago. It probably began long before that in the public sector. When and how did such standards develop in that century's *mélange* of regulated and unregulated environments? What innovations spread and which were lost? Are any of them of interest to today's standard setters? How did these developments compare to those in other countries at the same time?

Other subjects of interest include the reactions of cities to the early good government movement of the Progressive era and the changes that occurred in municipal accounting with the rise of population and public spending.<sup>12</sup> To what extent did the Progressive accounting literature described in this paper present an accurate or biased picture of contemporary practices? When did budgeting first appear and how did it spread among state and local governments? What can be learned about audits of government financial reports? How were state and local taxes administered, accounted for, and reported? How did they differ from state to state and across the century? What do the practices in the field imply about the history of government accounting thought? What role did state and local government accounting play, if any, in the country's development of democracy?

Study of these and other subjects would provide exciting contributions to the history not only of accounting but of

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<sup>12</sup> See Previts and Merino [1998, pp. 167-173] for a discussion of the historical context.

government as well, contributions that would interest political scientists, historians, and economists, as well as accounting scholars and those interested in the history of public affairs. State and local government accounting is an understudied area in which historical research would rapidly improve our “knowledge of the... effects of alternative ... measurement and reporting structures” [Kinney, 2001, p. 278]. However, additional descriptive work must come first. Surely this is not beyond the inclination or capabilities of accounting historians, all of whom are accustomed to meticulously account for trees to describe forests.

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## **Accounting History**

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Wellington, New Zealand

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- Accounting in the public sector at the national, sub-national and local levels;
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**Submission and Review of Papers:** Papers written in the English language should be submitted electronically no later than **19 March 2010** to [6AHIC@ballarat.edu.au](mailto:6AHIC@ballarat.edu.au). All papers will be subject to a double-blind refereeing process and will be published on the conference web site, as refereed conference proceedings, unless otherwise advised.

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