Discursive Cartels: Uniform Cost Accounting Among American Manufacturers Before the New Deal

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Current events often reopen old questions once thought long-settled. As industrial nations, sectors, regions, and firms have diverged in economic performance and organizational form since the 1970s, many scholars began to rethink industrialization. We have begun to transcend the old historical duality between markets and hierarchies to (re)discover associations, internal contracting, and industrial districts [Campbell, Hollingsworth, and Lindberg, 1991; Gordon, 1994; Harris, 1991; Scranton, 1991; Brown, 1995; Stern, 1994]. Students of accounting history, too, have rediscovered nineteenth-century managerial accounting, demonstrating that it shares more with the information systems associated with vanguard manufacturing today than it does with the financially-driven systems of the intervening era [Johnson and Kaplan, 1991; Johnson, 1991, 1992].

This paper brings the work on American associations and accounting into dialogue through a history of the uniform cost accounting movement from 1900 to 1925. Uniform cost accounting, we shall see, became associationalism's central project in the 1910s and 1920s. Through it, associationalists made more progress than commonly thought in confronting the two obstacles said to undermine their project: malfeasance and illegitimacy. Moreover, under the tutelage of twentieth-century associationalists, nineteenth-century managerial accounting endured and progressed in surprising ways.

In recounting this story, I hope to transcend the persistent, but problematic, debate in business history and economic sociology over whether economic organization is best explained by efficiency or distributive motives. Despite enormous progress in these fields over the past two decades, the old debate remains. It continues to shape not only the way we have conceptualized the evolution of the modern corporation, but also organizations such as trade associations. While the distinction between economic efficiency and income distribution remains a good heuristic, a way to organize facts at first blush, efforts to arbitrate the debate by reference to the historical record are misguided. The routine cycle between power and efficiency explanations of American enterprise, as historians discover new "facts," ought to be enough to cause doubts. But this debate also shares a theoretical assumption that recent

BUSINESS AND ECONOMIC HISTORY, Volume twenty-six, no. 1, Fall 1997.
 ISSN 0894-6825.

work in interpretive social science calls in question. Despite their differences, the protagonists conceptualize agency in the same way: economic actors behave instrumentally to advance their preferences or interests under exogenous constraints. Disagreement centers upon precisely what preferences and what environmental constraints were most salient.

Drawing from interpretive or social constructionist theories of human agency, we contend that this approach to economic action is problematic [Bourdieu, 1977; Berk, 1994; Herrigel, 1993; Sabel and Zeitlin, forthcoming; Scott, 1988; Somers 1992; Unger, 1988]. It underestimates the social nature of preferences or interests, and it overestimates the autonomy of exogenous "facts" from social relations. Instead, we conceive of economic agents as sociable beings, whose identities are shaped by the language or conventions they share with others. Facts about the environment, moreover, are never simply external to economic agents – neither direct nor probabilistic determinants of human action. Instead, economic facts are partially constructed by social conventions. This is not to say that social norms *determine* the environment or economic action. Like facts, norms are ambiguous, and thus, the object of conflict and interpretation.

We argue that economic history is better seen as a series of political struggles over the legitimate nature of social order, which result in shared frameworks of industrial governance that shape the most basic aspects of economic form and practice, from the uses of technology to the division of labor. Consequently, our subjects' identities and the models by which they understand events and make choices will be central to a narrative of uniform cost accounting. Associationalists, we shall see, did not calculate whether it was advantageous to cooperate with others (as game theory predicts) [Gordon 1994; Bowman 1985, 1989], as much as they tried to figure out whether collaboration with one set of actors made more sense than collaboration with another. Similarly, managers developed uniform accounting systems not so much to monitor and control other people (as principal-agent theory predicts) [Raff and Temin, 1991], as to provide a language by which to describe and evaluate the world to one another.

The story of uniform cost accounting follows our subjects into three contexts: a fight over identity within the American Institute of Accountants; the development of uniform cost accounting within trade associations and the National Association of Cost Accountants (NACA); and the development of a "Standard Cost-Finding System" in the printing industry from 1908 to 1925. I will show that the more elaborate uniform cost accounting by association became, the more it narrowed the sharp distinction between economic efficiency and income distribution.

Uniform Cost Accounting

In October 1919, 35 accountants met in Buffalo, New York to found the National Association of Cost Accountants [Zeff, 1984, p. 450]. The occasion was the culmination of a six-year debate within the American Institute

of Accountants over a seemingly arcane question – whether to include interest on capital as a cost. This issue galvanized a foundational conflict over the participants' identities and the terms by which their profession would apprehend economic performance. At its simplest, this was a conflict between auditors and engineers. The auditors worried about the distribution of wealth. The fundamental problems of production, they thought, had been mostly solved by the technological and corporate revolutions of the previous quarter century. Their professional problem was how to monitor business wealth and earnings in the least biased way. The engineers considered cost calculation in productionist, rather than distributive, terms. The problems of production were ongoing. Corporate enterprise and new technology had only made them more complex, demanding more sophisticated ways of gathering information, crafting comparisons, and making decisions.

It might be tempting to root these distinctions in a material division of labor: auditors came from mass production corporate sectors and engineers from proprietary specialty sectors – say, steel rails and machine tools respectively. But, with a relatively small number of exceptions, this sharp distinction was not so clear in the early twentieth century. Nor was the division among accountants between auditors and engineers. It was precisely debates like the one over interest that provided the framework for economic institutions and professional identities. Nonetheless, we adopt the distinctions between auditor and engineer, distribution and production, mass and specialty production as ideal types. Though helpful in organizing our narrative, we shall see how associationalists and engineers designed institutions whose intent was to moot the distinctions between production and distribution, efficiency and equity [Sabel, 1994].

Interest as a Cost

Through much of the nineteenth century, American manufacturers thought about cost accounting largely in terms of direct costs, that is, the cost of labor and materials expended in production. Only late in the century did they begin to consider overhead costs (or "burden") – such indirect costs as administration, power, bad accounts, and the interest on capital. In the 1890s the American Society of Mechanical Engineers (ASME) included interest in a long list of overhead items to be included in calculating the cost of production. Inclusion, they reasoned, was necessary to make a variety of useful decisions, such as whether to make or buy a component or whether to scrap an outdated piece of machinery and buy a new one. Until well into the new century, when inclusion came under attack by financial auditors, the engineers saw little reason to justify their position [Zeff 1985; Previts and Merino, 1979, pp. 169-85; Johnson and Kaplan, 1991, pp. 130-39; Garner, 1976, pp. 142-61].

The auditors' worries arose when the great merger wave at the turn of the century extended the market for securities from railroads to industrials, and called forth widespread demands to redistribute the wealth of "the trusts." Bankers, investors, labor, consumers, and the state demanded reliable accounts

of business wealth and profits. The more redistributive claims on business income were made, the more accountants imagined themselves independent or "public" auditors, whose task it was to calculate objective measures of income, profit, assets, and liabilities. And the more they conceived of these as objective categories, the more they attacked the practice of including interest on capital as a cost [Previts and Merino, p. 181; Johnson and Kaplan, pp. 130-32].

This debate took place mainly within the American Institute of Accountants. In 1913, the association devoted several issues of its house periodical, the *Journal of Accountancy*, to it [Garner, 1954, pp. 142-61; Previts and Merino, 1979, pp. 182-84]. The auditors went on the offensive. There were only two good purposes for figuring the costs of manufactured goods, argued J. Porter Joplin; first, it was necessary to calculate prices, second, in order to assess the fair value of merchandise entered on a balance sheet as an asset, it was necessary to calculate the cost of inventories. In pricing, it was a "fundamental principle that when goods are...manufactured to be sold, no profits [should] be considered until a sale is perfected. [A]nd yet, by...charging interest in determining costs, a profit is taken [before the sale. Should an accountant construct a] balance sheet...where interest has been included in determining the value of goods in process or of manufactured articles [held in inventory]," he would overstate a firm's financial worth. A publicly unreliable document, such a balance sheet would be useless for "seeking...working capital or a temporary loan" [Joplin, 1913, pp. 334-35].

"The correct basis" for valuing inventories, added J.E. Sterrett, is always "the cost to produce the goods in the stage or condition in which they are taken in the inventory... An auditor cannot properly give an unqualified certificate to a balance sheet in which the inventory prices include a charge for interest upon capital." Lenders, he added, "naturally object to any attempt at anticipation of profit upon the part of a borrower" since it artificially inflates value [Sterrett, 1913, pp. 241-44].

Interest, the auditors concluded, was objectively a profit – one share of the product left over after a business had paid manufacturing, selling, and overhead costs. As such it was no different than cash or dividends. To include it as a cost was not only erroneous, it smacked of sleight-of-hand and maligned the "public" accountant's nascent credibility. The auditor's goal was to value income and assets as accurately and objectively as possible, and so to avoid becoming a partisan in the distributive struggle.

Under attack, the engineers made explicit the many reasons they had practiced inclusion. But they also broached a theoretical defense. Their lead spokesperson within the AIA, Clinton Scovell, went to the heart of the matter. The claim that interest was profit, he charged, was no more than assertion. The auditors had failed to make a case. Economists, he said, had a more coherent definition of interest. Like wages and rent – the cost incurred for the use of labor and land – interest on investment was best conceived as the cost for the use of capital or physical assets in production. In the last analysis, however, Scovell thought the best standard for definition was utility [Scovell, 1919, pp. 12-32].

The purpose of cost data, he said, was to advance productivity by enhancing the decision-making capacity of managers and their subordinates. Business decisions were always relative, not the application of objective rules or laws. Cost accounting's purpose was to enable useful comparisons. But no significant comparisons between "different establishments, different periods within the same establishment, or between different methods in the same establishment" were possible if the cost of capital investment was neglected, wrote William Morse Cole for the inclusionists [Cole, 1913, pp. 232-36]. How, for example, could a manufacturer decide whether to make or buy a component without including the cost of interest on machinery? How could one compare the profitability of different products made within a single firm without including the cost of capital devoted to making them? How could one compare the productivity of different departments, such as presswork and composition in printing, without including interest on plant and machinery? How could one calculate the cost of carrying inventory stocks without including the interest on money borrowed to buy them? Or how could one compare the cost of making versus buying electrical power, if one failed to include the interest on a generating plant?

It might be, Scovell conceded, that one could ignore the interest paid on inventory, machinery, or other capital equipment in transportation or continuous processing sectors (such as flour milling and oil refining) where products were relatively uniform. In such cases, accountants could spread overhead costs over the total units of production and then calculate the average profitability of output without losing much valuable information. However, "when...dealing with the practical problems of cost accounting in most industries" where products and production processes were diverse and multiple comparisons routine, it was necessary to include interest in the cost of machinery, plant, and inventory [Scovell, 1919, p. 16].

Heated as this debate became, it might have been resolved by segregating accounting techniques according to ends. Among others, A. Hamilton Church suggested that interest be included for the purpose of gathering useful statistics within the firm and excluded for the purpose of financial statements [Church, 1913, pp. 236-40]. But, the stakes were too high for compromise within the AIA, where the cultural authority of "certified public accountants" was uncertain and the taint of self interest duly magnified. Although ready to shunt the issue aside in favor of exclusion, AIA leadership nonetheless agreed to consign the matter to a committee [Zeff, 1984, p. 449].

Having "had the benefit of the extreme views of Mr. Clinton Scovell," the committee reported to the 1918 AIA convention, "[we find ourselves] at odds" with them. Interest is not an "expenditure for production...but...an anticipation of profits and, as such, has no logical standing in the computation of production cost... Inclusion results in...false statements of assets and income." Of course, accountants could offset the "artificial inflation" of assets by creating a reserve account on the balance sheet, but this was an unnecessarily complicated and redundant procedure – not unlike the "hillside

exploits of the 'Gallant Duke of York' and his famous ten thousand men" [American Institute of Accountants, 1918, pp. 110-12].

The committee also dismissed the engineers' concern with comparison: there was such diversity in methods of cost calculation among plants and production processes that excluding interest was likely to have little effect upon managerial decision making. The report ended abruptly: "In conclusion, it is the opinion of your committee that the inclusion in production cost of interest on investment is unsound in theory and wrong, not to say absurd, in practice" [American Institute of Accountants, 1918, pp. 110-12].

Within months of the AIA report, the American Association of University Instructors in Accounting sponsored a debate between Scovell and economist Lewis Haney at its annual meeting. Scovell reiterated his position. Haney's attack on inclusion for its partisanship was even more direct than his counterparts' in the AIA. He focused neither on practical comparisons nor financial distortions, but rather on the pricing goals of cost accounting in general, and of inclusion in particular. Cost accounting was not a matter of practicality, Haney began, but one of "fundamental principles and truth. This matter of business policy," he charged,

> raises the question in my mind as to what the motive is for...including interest in cost. Doubtless the motive is in part to educate irresponsible business men, the idea being to prevent unreasonable price cutting and to establish a wise selling policy. This motive may be commendable and unobjectionable... Other motives exist, however, which may be more sinister. During the last few years, there has been a general tendency in the business world to eliminate competition in price. We have an organized propaganda for the maintenance of resale prices on manufactured articles... We find many accountants standing for the value of investment, instead of the cost of investment as the basis for price fixing... Also the portentous growth of association in all the industries is a well known phenomenon; and these associations generally center in the idea of what is called "uniform systems of cost accounting," a phrase which may mean systems of uniform costs. Now comes an effort to put fixed return on investment into cost. Where will it all end? Are we to reach some advanced economic stage in which the "industrial engineer's" art will enable the tired business man to sell "at cost" and still receive a return on investment [American Association of University Instructors, 1919, pp. 38-39]?

NACA and the Promise of Uniform Cost Accounting

Haney's charges were prescient. When Scovell and others left the AIA to form the National Association of Cost Accountants (NACA) in 1919, they enlisted allies from the trade association movement. From the outset, NACA's

main goals were to develop information systems that enhanced management's capacity to evaluate products and production processes and that helped to regulate cut-throat price competition. Trade association executives were conspicuous among early NACA members. In 1920 associationalists formed the American Trade Association Executives (ATAE), a professional association of trade secretaries, not a federation of trade associations [ATAE, 1921]. Among the keynote speakers at the first ATAE conventions were NACA secretary, Stuart Cameron McLeod, and soon-to-be president, Charles R. Stevenson [ATAE, 1926, pp. 10-14]. Also in 1919, the U.S. Chamber of Commerce created a "Fabricated Production Department," whose first project was uniform cost accounting [Chamber of Commerce, October 23, 1923., p. 1]. Its chair, E.W. McCullogh, was among the founding members of the ATAE [ATAE, 1921, p. 17]. In 1923 and 1924 the Chamber sponsored three national meetings on uniform cost accounting, attended primarily by trade association secretaries and cost accountants. At the end of the final meeting, conferees considered a motion to fold the conference into the annual work of the ATAE. In short, the formation of NACA in 1919 galvanized an alliance between the engineers and the associationalists (that is, if they were not already the same people).

But this was not merely a natural affinity between those with professional and those with pecuniary interests. As engineer-accountants talked more and more with associationalists, the sharp distinction between productionist and distributive concerns that seemed to undergird the split within the AIA began to blur. The fate of each group's social status, of managerial accounting's and associationalism's cultural authority, became inseparable. The history of this alliance – its promise to improve production, stabilize competition, and answer Haney's charges – is the subject of the rest of this section.

Two issues consumed the first NACA meeting: the debate over interest and the necessity for standardization in cost accounting terms and methods. The association took no official position on inclusion and dropped the issue after 1921. There was consensus, by contrast, that unless a common language were developed, cost accounting would stagnate. In 1921, NACA representatives met with counterparts from the American Society of Mechanical Engineers to develop a lexicon of common terms [NACA *Yearbook*, 1921, p. 41]. Unlike the AIA, NACA did not conceive itself as a governing body, empowered to certify members or make and enforce rules. Instead, its founders envisioned an educational association. NACA would leave governance to industry associations, while it coordinated the exchange of information and debate over method, through annual meetings, regional discussion groups, the NACA Department of Research, and a monthly bulletin.

In 1922 Research Director, J.P. Jordan, told members that "the most valuable materials...collected by the Research Department are the uniform cost systems devised by trade associations." Though imperfect, they were full of useful information. The Department drew liberally from them to answer practical questions from members, included selections from them as appendices in NACA publications, and devoted much of its monthly *Bulletin* to

the publishing of trade association cost systems. Jordan implored NACA members to "flood [the Research Department] with suggestions, information and inquiries" [*NACA Yearbook*, 1921, pp. 39-42].

At the same meeting, NACA's first president, William Lybrand outlined the association's goals: "(a) To bring about a better knowledge of the real value of modern cost methods among American business men and to develop a clearer understanding of the relation between cost accounting and industrial management. (b) To develop, improve and as far as practicable standardize cost accounting. (c) To cooperate with commercial and trade associations which are interested in the development of cost work" [*NACA Yearbook*, 1921, p. 12]. He hoped that NACA would also sponsor small group discussions throughout the year, in which practitioners from different industries could consult with professionals and discuss shared problems.

Because the engineer-accountant's cultural authority depended upon cost accounting's use in industrial sites, NACA welcomed the associationalist's turn to uniform cost accounting. In 1924, Jordan (now NACA's president) recounted a stylized history of the development of uniform cost accounting in which trade associations figured prominently. In the 19th century, he told the Chamber of Commerce convention, manufacturers began to keep costs because

> nobody knew how much to sell the[ir] stuff for...[In time, they began to include] overhead...[but] it was a joke... "Add 110%" [to direct costs, became the manufacturer's motto.] Then along came the beautiful breed of efficiency engineers, of which I happened to be one myself, and they started one of the greatest services that was ever done. [The trouble was, more often than not, we developed] a theoretical method of figuring costs and attempted to ramrod it down [our clients'] throats. That is where a great many mistakes have been made. [Now we have learned that cooperation is necessary. Manufacturers must get together with one another and with accountants] for the benefit of all, with all the known facts, so [they] can find out by comparisons between plants and between departments whether one...is doing better than another and then study the reasons [Chamber of Commerce, March 25 and 26, 1924, pp. 51-57].

Uniform cost systems, in other words, must be constructed from the bottom up through comparison and deliberation. The role of professional accountants, Jordan concluded, should be consultative. Engineer-accountants thus came to associationalism from their failures to influence industry.

How then did associations come to uniform cost accounting? As noted, by 1922 the NACA Department of Research had gathered documentation for more than 100 associational cost systems. Many were incomplete, others no more than rules for estimating, or a code of accounts. Nonetheless, NACA's inventory is a rough estimate of the number of associations that had begun to take uniform cost accounting seriously. Despite the vast diversity in sectors, my

reading of the testimony of association secretaries before the NACA, ATAE, and Chamber of Commerce meetings reveals a common story. Most associations had repeatedly failed in their efforts to fix prices. Many, especially in batch, multiple product, and custom sectors, had constructed complex price lists and then tried to hold members to uniform discounts. In every case, the story went, price fixing succeeded for a time, but then fell prey to opportunism in hard times. Only the rare association had devised an effective mode of enforcement. Besides, by the turn of the century it had become clear that such pricing schemes were unlawful.

This much has become a familiar story in American business history [Campbell, Hollingsworth, and Lindberg, 1991; Gordon, 1995]. Less well recognized is how many associations abandoned price fixing for uniform cost accounting. In some industries, like printing and malleable castings, associations had come to uniform cost accounting directly. In others, like construction, steel bridge building, and cotton printing, they had come to cost accounting through efforts to share price information. Perhaps the best examples of the second path were provided by Arthur Jerome Eddy, the father of the "open price association" [Berk, 1996]. In 1912, Eddy, lawyer and trade association secretary, published *The New Competition* – a polemic for open price associations. Eddy had begun his work in the construction industry, where he thought the main cause of cut-throat competition was not overproduction (as many of his contemporaries and ours insist), but rather an asymmetry of information and bargaining power between buyers and sellers. Eddy noted that when buyers held all the information, they could play one bidder off against another and drive prices down to unreasonable levels. Builders had tried repeatedly to fix prices to no avail. Each failure fostered mistrust and exacerbated cut-throat competition.

Suppose instead, Eddy said, that firms shared their job estimates in the midst of the bidding process. They would redress the information imbalance and check the tendency to drive prices below cost. Suppose, he added, they mistrusted one another and were afraid to share information in the midst of bidding, they might do so after the fact instead. Either way, they would get together afterward to discuss what happened. In Eddy's experiments talk shifted quickly from prices to costs. Did the winning bidder have genuine cost advantages, or had he bid below cost, or used shoddy materials and cheap, unskilled labor? Once these questions were broached, the lacuna in a common language became evident. What, precisely, were firms comparing?

Trade association executives in many industries shared Eddy's story. The history of association in their industry revealed efforts to fix prices and construct price lists on an "arbitrary" basis. Each time they failed – only to escalate mistrust and destructive competition. Whether they tried an open price plan or not, the effort to get firms to compare themselves to one another is central to every associationalist's narrative.

Over and over, trade secretaries told one another how they brought members of their industry together and asked them to estimate the cost of a standard job. (Even custom industries, like job printing, had standard products like letterheads.) In each instance, members were shocked by the huge

dispersion in prices. In printing, the average variation among estimates made in sixty-six cities was 72% [Voorhees, July 27, 1925, p. 281]. In malleable castings, estimates varied 122% [Chamber of Commerce, October, 23 1923, pp.4-5]; in rubber, 100% [Chamber of Commerce, March 25-26, 1924, p. 129]; in silk, 125% [Chamber of Commerce , March 1924, 91-92]; and in drug manufacture, several experiments in estimating revealed variations from 17% to 250% [Chamber of Commerce, March 25-26, 1924, p. 850]. It took little convincing that such huge variations were not the result of differences in efficiency, or the cost of labor and materials.

As Harry Green, co-chair of the Cracker Cost Club, of the Cracker and Biscuit Association, said after listening to two days of similar testimony at the 1921 NACA meeting, the "the point, which impressed upon me more vividly than ever before, is the great need for all of us to speak the same language. I believe that most misunderstandings in our work come about because we do not all speak the same language... If we were all to get down to using a common language and to calling the same things by the same names, I believe about seventy-five per cent. of our troubles would be eliminated" [*NACA Yearbook*, 1921, pp. 163-64]. Or as Plywood Manufacturers' Association Commissioner, M. Wulpi, put it, the trade association movement would languish until each sector had developed a common "cost lexicon" [Chamber of Commerce, October 23, 1924, p. 81].

Thus associationalists became convinced that uniform cost accounting, not enforcement, was the best hope to channel competition away from cut-throat pricing into product and manufacturing process improvement. The idea that uniform cost accounting could "elevate" competition, however, had several meanings. At its simplest, it meant that "those who knew their costs were unlikely to price below them." This seemed especially true for the many small firms who kept their figures "on their cuffs" and failed to account systematically for overhead and depreciation. Naturally, they tended to underprice. But, uniform cost accounting, in this view, would have an indirectly salutary effect upon competition among those with functioning cost systems as well. Should firms in jobbing industries, for example, estimate with the same methods, there would tend to be less dispersion in prices. Uniform cost accounting also promised beneficial psychological effects: those who could show customers their costs would be more likely to hold the line in negotiating prices.

At the same time, uniform cost accounting would achieve efficiency gains. The more manufacturers adopted state-of-the-art cost accounting in their industry, J.P. Jordan said, the more they would think systematically about "planning, routing, and scheduling" conversion processes within the firm. And the more they understood about the cost of the many products they made, the more they could distinguish the profitable from the unprofitable. Uniform cost accounting, according to the associationalists, would also make it possible for firms in the same industry to compare costs with one another and learn where they were doing well and where they needed to improve. As J. Lee Nicholson (protagonist in the "interest" debate, and founding member of NACA) wrote in his leading textbook on cost accounting:

> If a manufacturer can not make money in competition with other concerns when using the same methods of figuring costs, he can only conclude that his goods or his marketing, or both of them, are costing him too much. His next step, naturally, is to analyze closely the methods and conditions under which he is manufacturing and marketing his product, until he finds and corrects the inefficiencies which are handicapping him so seriously [cited in U.S. Federal Trade Commission, 1929. p. 12].

By making "departmental costs...as public as sunlight," Jordan added, not only top managers, but plant superintendents, foremen, and even workers themselves, could better diagnose where they needed to improve [Jordan, p. 46].

For some, like Jordan, the more attention manufacturers paid to improving products and operations, the less price would be an issue. Rivalry would naturally focus on product quality and firms would take profits from low cost. Cut-throat pricing would take care of itself. For others uniform cost systems would become the source of voluntary price coordination. By making industry cost averages available, or by revising existing price lists on the basis of industry average costs drawn from uniform systems, association members could agree to price off of average costs. Advocates of average cost pricing did not aim for uniformity. Instead, they saw it as a coordinating cue, by which manufacturers could price with knowledge of their competitors' costs. Here, once again, the idea was to reduce dispersion, not to fix prices collectively and then attempt to enforce them.

At one level, the success of average cost pricing depended upon a cognitive claim. Uniform cost accounting enthusiasts thought it was possible, through education, to reshape the way members thought about competition. At another level, however, associationalists thought that uniform cost accounting promised not so much to do away with self interest as to narrow the separation between individual and group interests. According to this view, as individuals became more and more dependent upon the provision of collective information, they would be unable to conceive their own best strategy without comparison to others. The distributive and productive aspects of associational governance would also be narrowed. From a firm's perspective, once one found it possible to make money from improving products and production processes through uniform cost accounting, cooperation with average cost pricing would follow. From an association's perspective, average cost pricing promised not only to stabilize competition, but to ensure nonprice incentives to economic improvement and so to legitimate the associational project. As Charles R. Stevenson said,

> It is evident that if an average industry price were established, certain companies would make more than normal profit and certain companies would make less... In a desire to make more than normal profit, constant efforts to increase the efficiency of the industry would be made. Individual initiative would be

> preserved, and fair industry price would be gradually reduced so that the public would be able to buy more of the products or secure them at a lower price... Inefficient companies would be gradually forced out of business or compelled to modernize and improve their own efficiency, which, in turn would further reduce the industry price level. Earnings on securities...would be stabilized, and a sound means for investing funds would be provided [*NACA Yearbook*, 1934, pp. 63-64].

Or, as Bolt, Nut and Rivet Association president, Charles Graham, told the Federal Trade Commission, pricing from average costs was not so much a replacement for market discipline as it was a way to preserve and regulate it in productive ways. In the long run, he admitted, those with costs above the average would be driven from business if they did not improve. With knowledge of industry costs and an assurance that others priced from the average, they also retained the incentive to improve. Similarly, below average cost producers also had an incentive to do better, because they knew others were likely to catch up. Besides, in Graham's industry, where entry was relatively easy, it was typically the less established "wildcat" shop, which knew little of its costs, that engaged in cut-throat pricing. So the low cost producer had another reason to maintain average prices, namely, to check the tendency toward desperate pricing by less established firms [Berk, 1996].

In sum, associationalists and cost engineers formed an alliance around uniform cost accounting. They shared the belief that it was possible to elevate competition by constructing a common language and methodology, by sharing information, and by setting and revising industry standards by which firms could make comparisons. Uniform cost accounting was, in a (nonpejorative) sense, a panacea – a program intended to improve the capacity of business firms to apprehend their performance, and to communicate internally and with one another. As such, it promised to lower the cost of converting labor, capital, and materials into salable products and to reduce the perverse effects of unregulated price competition. Its advocates prescribed no particular manufacturing or marketing policies. Uniform cost accounting by association prescribed only an institutional plan for improving the way firms and sectors made those decisions.

Printing

Consider the example of commercial and job printing. This is a good case study for several reasons. First, it was a pioneer in uniform cost accounting by association. As such it was observed carefully and imitated by others. Printers presented their system in some detail at both NACA and Chamber of Commerce meetings, and associationalists watched carefully as the printers' cost system came under Federal Trade Commission scrutiny in 1921. Moreover, the structure of commercial printing – a large number of quite small firms – has advantages and disadvantages for our purposes. It provides a good test

case for voluntary cooperation, since rational choice theorists tell us that large numbers of relatively equal competitors are unlikely to cooperate. So if it can happen in printing it is possible elsewhere. On the downside, this was largely a custom products industry, where prices were fixed for each job. Therefore, there are limits to how much one can generalize from the printers' experience.

The printers path to uniform cost accounting is typical. In this highly localized sector, urban "boards of trade" had long published price lists, organized according to standard products and classes of work, and then periodically revised discount rates. Adherence to the list routinely collapsed in late nineteenth- and early twentieth-century recessions, leaving the trade on the edge of profitability. Another event also spurred the turn to cost accounting. In 1908, after nearly a decade of struggle, the typesetters union won the eight-hour day. In New York, Philadelphia and Boston – all substantially organized cities – local employers' associations turned from labor struggles to cost accounting, in efforts to get their own houses in order. Master printers came to believe that there were only two ways to make up for lost hours and higher pay, namely, to regulate price competition and to find non-wage avenues to lower production costs [Powell, 1926a, pp. 84-95; Powell, 1926b; Voorhees, 1922, p.5].

Together, tri-city printers formed a cost commission to survey their members' accounting systems and to design a uniform system from the best qualities of each. In 1909 the commission went national, forming the American Printers' Cost Commission (APCC). Following the annual meeting of the United Typothetae of America (the leading national association of employing printers), the APCC held their first convention in Chicago. After four annual meetings, the APCC disbanded, its work taken up the UTA. Uniform cost accounting became the Typothetae's main focus for the next decade. In 1913, the UTA appointed a committee to revise the APCC's uniform system; in 1916 it launched a "three year plan" to diffuse the *UTA Standard Cost-Finding System* throughout the industry; and in 1918, it created a permanent department devoted to cost accounting.

The printers' first *Standard Cost-Finding System* was published in 1911 and revised regularly through the 1940s. I have two goals in describing the system: first, to show that it was rooted in productionist, not financial, principles; and second, to elaborate the relationship between its distributive and efficiency ends.

The *Standard Cost-Finding System* was organized around six main principles. Two were paramount and reveal a great deal about the nature of production and commerce in the industry. The first principle was the "productive hour method" of calculating costs. Since commercial and job printing was a custom sector, in which each job was estimated and charged separately, printers had a keen interest in distinguishing productive or "chargeable" hours from nonproductive or "nonchargeable hours." How much time was actually devoted to directly remunerative work? How much was devoted to maintenance, switching from job to job, or mere idleness? The standard unit of production, then, was to be the "productive hour," measured in two ways. In departments, like the bindery, where most work was done by

hand, the "productive man hour" would be the standard unit of measurement. In departments, like the pressroom where most work was done by machinery, the "productive machine hour" would be the standard unit of measurement [UTA Standard Cost-Finding System, 1927, pp. 3, 19-23, 32-36; Koch, 1928, pp. 12,121; APCC, 1910, 76-91].

The second organizing principle, hinted at by the first, was "departmentalization." Here again, the categories were devised from a productionist, rather than a financial, perspective. Each printing business was to be divided into departments according to the processes of manufacture and commerce. Generally, all vertically integrated printers shared three main departmental divisions: composition, printing or presswork, and binding. Additional departments included proofreading, stock handling, selling, and so on. But these were only aggregate divisions – any number of "departments" could be devised within them, according to the sorts of questions master printers had. For example, one might want to distinguish hand from machine composition or one sort of printing press from another, for purposes of a more finely-grained evaluation. In that case, one could departmentalize an individual machine or class of workers. [APCC, 1910, pp. 79-80; Koch, 1928, pp. 13, 109-11; UTA Standard Cost Finding System, 1927, pp. 4, 24-25, 32].

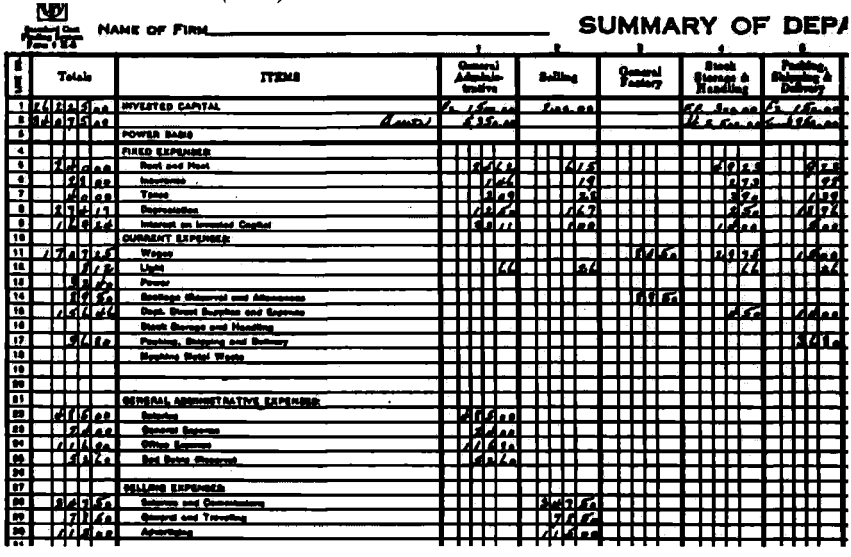
Drawing upon the first two principles, the architects of the Standard Cost System devised a basic measure of productive work in each department – the "cost per chargeable hour." This was calculated by dividing the total cost of a department, including prorated commercial expenses, by the number of productive or chargeable hours in that department [Koch, 1928, pp.109-11; UTA Standard Cost Finding System, 1927, p. 3; APCC, 1910, 83-84]. Another principle, useful for an industry in which costs had to be estimated before work was begun, was the notion of "normal costs." By averaging particular cost categories, such as wages and power by department, over the previous twelve months, printers could calculate a "normal cost" to use in estimating. Since they were revised monthly, normal costs would result in more accurate estimating; that is, the difference between estimated (*ex ante*) and real (*ex post*) costs would be diminished [Koch, 1928, pp.13, 121; UTA Standard Cost Finding System, 1927, p. 4].

Finally there was the critical issue of overhead costs or "burden," that is, costs that were not incurred directly through the process of manufacture, stock handling, or selling, such as the cost of administration, bad work, heat and power, or insurance. "Burden" was to be divided into two categories: 1) departmental overhead expenses, that is, those costs, like power, that could be distributed directly to the departments that incurred them, and 2) general overheads, like administrative expenses, which had to be prorated according to the percentage of total standard hour costs accorded to each department. For example, if hand composition work constituted 13% of the total chargeable cost of *all* departments, then 13% of administrative overhead would be allocated to it [Koch, 1928, pp. 14, 21; UTA Standard Cost Finding System, 1927, p. 5; APCC, 1910, pp.133-37].

The Standard Cost System was administered through a series of standard tickets and forms to be filled out by workers, foremen, and the cost department. Depending upon whether a department's productive hours were machine or labor, workers would log the total time spent at a particular machine or on a particular job, respectively. In the pressroom, for example, each press had its own ticket, on which each man (printers were generally male) would log the machine-time devoted to each job. In hand binding, each woman (binders were generally female) would record her labor-time devoted to each job [Koch, 1928, pp. 49-89; UTA Standard Cost Finding System, 1927, pp. 25-32; APCC, 1910, pp.84-90].

Drawing upon the data derived from tickets and overheads, the cost department calculated a variety of more aggregate measures. The key to the whole system was "Form 9-H," a chart much like today's spreadsheet. 9-H was a summary of monthly departmental costs laid out in an expandable matrix. On the horizontal axis each column was devoted to a single department. On the vertical, each row was devoted to a different category of expense: 1) "Fixed Charges" (broken down into items like rent, insurance, and interest), 2) "Current Expenses" (items such as light, power, departmental direct supplies and expenses), 3) "General Factory Overhead Allocated," and 4) "General Commercial Overhead Allocated." [Koch, 1928, pp. 31-33; UTA Standard Cost Finding System, 1927, 6-19, 24-25].

FIGURE 1: *Form 9-H (detail).*


NAME OF FIRM_____ SUMMARY OF DEPA

	Totals	ITEMS	1 General Administrative	2 Selling	3 General Factory	4 Stock Storage & Handling	5 Packing, Shipping & Delivery
1		INVESTED CAPITAL					
2							
3		POWER BASIS					
4		FIXED EXPENSES					
5		Rent and Heat					
6		Insurance					
7		Taxes					
8		Depreciation					
9		Interest on Invested Capital					
10		CURRENT EXPENSES					
11		Wages					
12		Light					
13		Power					
14		Bonuses (Monthly) and Allowances					
15		Dept. Direct Supplies and Expenses					
16		Stock Storage and Handling					
17		Packing, Shipping and Delivery					
18		Shipping Detail Weeks					
19							
20							
21		GENERAL ADMINISTRATIVE EXPENSES					
22		Salaries					
23		General Expense					
24		Office Expenses					
25		Bad Debts Charged					
26							
27		SELLING EXPENSES					
28		Salaries and Commissions					
29		General and Traveling					
30		Advertising					

Most of the column headings on Form 9-H were left blank to ensure flexibility in constructing departmental categories. Printers were coached to begin simply, dividing their business according to relatively gross distinctions. But, as F.I. Ellick, an architect of the system, told the 1911 APCC, experience with a simple system inevitably raised new questions. A printer might want to learn, for example, why a press's daily output fell so far below the

manufacturer's promise, or why some classes of work seemed to use machinery more productively than others. It was simple enough to departmentalize a machine or a class of workers in order to gather the information necessary to begin to diagnose such problems [APCC, 1910, pp. 80-81].

For each department, moreover, Form 9-H provided a set of summary statistics, such as 1) total chargeable hours, 2) wage cost per chargeable hour, 3) factory cost per chargeable hour, 4) general commercial cost per chargeable hour, and 5) total cost per chargeable hour. Such ratios provided a method to compare performance over time and between departments. For example, Form 9-H allowed printers to compare different classes of labor according to chargeable hours. Was there a ready explanation for differences, or did comparison necessitate more inquiry?

Similarly for capital. Printing machinery was a rapidly advancing art in the early twentieth century. Printing had converted more quickly and extensively to electricity than any other industry. The result was greater technical diversity and flexibility in production, rapid innovation, and a widespread belief that printers must routinely scrap and buy anew in order to be competitive [UTA Yearbook, 1900, pp. 208-11, 279-88]. However, the tendency was to "over-equip and under-organize." No master printer, A.M. Glossbrenner, implored, should expand or buy new machinery simply because the "supply man" told him to or because he thought his competitors were doing so. The conditions in each plant were sufficiently different to merit careful investigation. With the *Standard Cost-Finding System* in place, printers could compare the cost of current output to the capital outlay costs of projected improvements [APCC, 1910, pp. 47-51].

Finally, the summary statistics in Form 9-H also allowed printers to discover the source of "leakages" in machine and labor productivity. By comparing all workers to the most productive, or to the average, cost data could be used to detect poor skills or "soldiering" among workers. Just as often, however, detailed comparisons of labor productivity or chargeable hours revealed idle work-time due to a poor stock inventory, bad scheduling, inappropriate materials, or the failure to take orders accurately. These were, Ellick said, "management problems," not under the control or responsibility of journeymen and their tenders [APCC, 1910, pp. 84-90].

In addition to data on production costs, the *Standard Cost-Finding System* also provided useful information for comparing the success of different products. As a consequence of uniformity, comparisons between job costs became more reliable. And, although this was a custom-products industry, many jobs were standard and customers recurring. Printers with diverse specialties, moreover, often classified their products into categories like "law," "job," and "express" printing. With the *Standard Cost-Finding System*, they learned to compare the profitability of such product lines and to diagnose the underlying causes of variation [APCC, 1910, 33-35].

The ends of the *Standard Cost-Finding System* were not all efficiency. Some, as I have suggested, were distributive. Many printers, like their brethren in other industries, thought that uniform cost accounting would check price

dispersion and subdue the tendency to price below cost. Others thought that pricing with more careful attention to total costs – including depreciation, interest on capital, and a fair allocation of overhead – would result in higher prices for the industry as a whole. Still others thought that the tendency to take on "fillers" – jobs intended to keep a shop busy, even though they were unprofitable – would decline. Once printers costed "fillers" more carefully and learned to estimate more comprehensively, they would accept only work that paid. In addition, cut-throat competition over large production runs, especially catalogue work, would be checked by careful cost comparisons. Repeated testimony from printers who had adopted the standard system revealed that they did "less work...[for] greater profit" [APCC, 1910, pp. 43-44, 57-59, 114-118].

Efforts to regulate competition through uniform cost accounting were also more collective and direct. Like the enthusiasts of average cost pricing in NACA, UTA officials thought it possible to dampen price competition by making data on industry averages widely available. In 1914, the UTA published its first "Annual Composite Statement," and twice over the next decade the research department revised its method of calculating and presenting industry averages. Over time, the UTA abandoned average prices and costs for physical measures of production.

The Annual Composite Statement was an aggregate version of Form 9-H, which provided industry averages by department. It also calculated a variety of useful ratios, such as the average industry percentage of expense each item in Form 9-H (e.g., rent, payroll, or heat) bore to total expense; or the average ratios of cost items (e.g. materials used or stock handling expense) to sales. Each of these items, as well as departmental averages, were presented in eight categories distinguished by firm size, so printers could compare themselves more appropriately to others [Miller, 1922, 117-20].

In 1918, the Research Department added *The Standard Guide*, a loose-leaf volume with average cost and physical production data for a variety of products and production processes. *The Standard Guide* provided more nuanced forms of comparison than the composite statement; its designers thought it particularly useful for job estimating and pricing. *The Standard Guide* was in two parts. Part One, the "price list," was a price list for standard products, such as letterheads, tags, envelopes, and cards [Miller, 1922, pp. 125-26]. It differed from traditional price lists only in that it was based not on conjecture, but upon cost averages calculated from data gathered from members. Prices were revised monthly, as new industry averages were calculated (hence the loose-leaf binder). The second part of *The Standard Guide* was a series of tables showing schedules of average hour rates (in physical output) and average costs per hour for all printing operations (layout, hand composition, machine composition, different sorts of presswork, tending, technical proofreading, handsewing, and so on) [Miller, 1922, pp. 122-26; Heir, 1923, p. 362].

In 1923, the UTA Department of Research replaced *The Standard Guide* with *Typothetae Average Production Records*. The *Standard Guide's* price list had been eliminated altogether. The Research Department explained that the cost of labor and materials varied so much from locality to locality that average

national prices were of little help in job estimating. Though wage scales varied significantly from locality to locality, physical production averages on most operations varied little more than 10% nationally. Moreover, the commercial section had become unwieldy, quadrupling in size in two years. It is also likely that, under investigation by the Federal Trade Commission, the UTA hoped to eliminate any overt signs of price fixing [Voorhees, July 27, 1925, p. 281].

At first blush, it appears that the sole purpose of the industry averages was redistributive, that is, to raise prices by providing a more subtle form of the printers' traditional price lists. The similarity between Part One of *The Standard Guide* and nineteenth century "board of trade" price lists is striking. But the purpose of *physical* averages was more complex – motivated both by efficiency and distributive ends. If the distributive by-product of individual cost accounting was to check cut-throat pricing, the efficiency by-product of average cost pricing was to enhance individual decision-making capacity.

In 1925, the UTA's Production Department explained the efficiency goals of the *Average Production Records* to the membership. Economists, it began, contend that the theory of decreasing returns holds in most industries: employers will add labor and materials to fixed capital until the point where additional units result in decreasing returns. This "point of saturation," however,

> has never been attained in the printing business. The problem is not to attain maximum production through additions of labor and equipment, but to arrive at the extreme efficiency of the plant as it already is, so that maximum profits may be derived and non profitable processes or departments eliminated. "Typothetae Average Production Records" are intended to enable the printer to size up his own plant. By application of the average records, by making accurate time layouts and thereby finding their costs correctly, the printer will be in a position to ascertain just what type of business is making him money, and what type of equipment is most productive. The printer is apt to like to hear his machinery going whether it is making him money or not. He often belongs to the classification of "musical printer" who keeps his machinery going at top speed the year round on business taken away from competitors and who usually [ends the year] with no money to put in the bank. In "Typothetae Average Production Records" the printer has an accurate gauge for detecting leaks in his plants. If he finds that his own records are low in comparison with the average production records, he can eliminate the unprofitable factors and place his plant on a sound and efficient basis. This is the most effective solution to the problem of attaining greater production other than by bidding for more business. By getting rid of unprofitable business and paying attention only to the kind that he can make money on, the printer will find that the production problem will take care of itself [*Typothetae Bulletin*, April 27, 1925, p. 54].

But in this worldview, where disciplined comparison was everything, the architects of *Typothetae Average Production Records* also hoped that estimators would come to trust physical averages as a base upon which to construct a "time layout" for each job. Some printers argued that estimators should adopt national production averages and multiply them by their own "normal costs" (derived, recall, from twelve-month averages on Form 9-H). Others argued that printers should compare *Average Production Records* to one's own estimates, while others said that printers should not only price from *physical* averages for the industry as a whole, but that that local UTA affiliates ought to produce their own cost averages to provide a more accurate local standard for pricing. Still others thought that estimating from *Average Production Records* would regulate competition by encouraging specialization. "The fact that every estimator in every plant," wrote the UTA's assistant director of research, George N. Voorhees,

> has at his command records of most of the methods by which any certain job may be handled on different equipment, should have a tendency to cut down the number of complaints of "price cutting." The *Typothetae Average Production Records* will place in the hands of every estimator the means of determining the time required to produce any given job, not only for the method he must use because of his equipment, but also for the method in which some other plant may handle the work, possibly more economically. In this way, the*Typothetae Average Production Records* may become a means of promoting better feeling among brother printers, and also prevent in some measure interference with each other's customers and kind of work by showing the limits of the range of profitable work for each kind of equipment [Voorhees, 1925, p. 288. See also Voorhees, 1920].

Comparing oneself to the national average, then, gave printers both the necessary information and the incentive to compete more intelligently. The idea was not to place a floor upon price competition but to reduce dispersion. As William Pfaff, President of the New Orleans Typothetae and later UTA president testified, by furnishing standards for estimating, high prices had come down and low prices gone up in his city [APCC, 1910, pp. 36-37]. Moreover, both high and low cost printers would have information and incentive to adopt industry averages as a "rudder or compass" [Voorhees, 1922, pp.8-9] for pricing.

> By using Typothetae Average Production Records, whether as a means of comparing the average records with his own, or as wholly a basis for his estimates, the printer who uses the book at all makes his prices tenable by the fact alone that they have been based upon an authoritative source. If he finds that his own production records are unusually high when compared to the Average Production Records, he can be certain that his own

> records or his own productive processes are inefficient or faulty. If his records are low on the other hand, he must know that his plant is more efficient than the average, and he may pocket the difference in profits with the assurance that he is entitled to them [*Typothetae Bulletin*, April 20, 1925, p. 39].

Cognizant that it was typically the high-cost "wildcat estimator" that demoralized prices, the more efficient printer had incentive to estimate prices from industry production averages and take profits from low costs. Moreover, educated by the standard cost system and national comparison, high-cost printers were likely to catch up, so the best printers had reason to improve.

In sum, uniform cost accounting in the commercial and job printing industry promised both productivity and distributive ends. By setting procedural and substantive standards, uniform cost accounting would regulate competition among printers, channeling it from prices into improvements in production processes and customer service. Procedurally, the "Standard Cost Finding System" provided printers with a method of cost calculation by which they could gather data sufficiently uniform to chart their own progress over time. Substantively, the calculation of averages – "normal departmental costs" for individuals, national averages for the sector – allowed firms to make disciplined comparisons within their own operations and between themselves and others. To be sure, such comparisons only told master printers where to look; they didn't tell them what they would find or precisely what to do. But, as Voorhees said, "the old proverb 'Well begun, is half done' is particularly applicable, for if we know where something is wrong, we are half way toward correction" [Voorhees, 1925, p. 288].

The goal of uniform cost accounting was to narrow the distance between decision-making for efficiency and decision-making for fairness. Viewed from the perspective of the firm, comparisons to the average – one's own or the industry's – provided a means to improve production and to better coordinate it with marketing. Viewed from the perspective of the association, cost and physical comparisons would cause competition to converge toward a standard; at the same time, it would provide the UTA with a means to advance such standards over time. To put it in more prosaic and contextual terms, collective standard-setting would augment printers' profits, despite organized labor's demands for better wages and fewer hours.

Conclusion

Since this paper is part of a work-in-progress, I cannot yet answer a pressing question: did uniform cost accounting achieve its promises in printing and elsewhere? In 1924, under pressure from the FTC, the printers modified their program considerably. Whether the effect was to undermine the efficacy of uniform cost accounting remains unclear. Nonetheless, by bringing the history of managerial accounting into closer dialogue with the history of associationalism, we can draw some provisional conclusions. First, we have shown that in uniform cost accounting, associationalists developed a coherent

program to address two problems commonly understood to undermine their project: enforcement and legitimacy [Campbell, Hollingsworth, and Lindberg, 1991; Gordon 1994; Bowman 1985, 1989]. Uniform cost accounting was a voluntary program, intended to regulate competition not by coercion, but by making individuals dependent upon collective information, comparison, and deliberation to decide what they, individually, wanted and how best to achieve it.

Uniform cost accounting also answered the normative charges – levied mostly in their time by economists, the Department of Justice, and the courts – that efforts to regulate price competition were always redistributive and that they undermined economic progress. To the contrary, replied the architects of uniform cost accounting systems, price regulation was necessary to preserve competition and to channel it from cut-throat pricing into product and process improvement. The problems of production and competition, associationalists thought, had not been solved by mass production and corporate organization. In printing, for example, progress was defined not as a steady increase in volume and speed (mass production criteria), but rather a process of "eliminating nonprofitable processes or departments,...ascertaining just what types of business...make[s]...money," and locating and eliminating "leakages" in production. These ends were possible once printers ceased chasing "fillers," catalogue work, and their competitors' customers; that is, once the threat of cut-throat price competition was eliminated. Uniform cost accounting, they said, was one means to these ends.

This paper also contributes to the history of managerial accounting in the United States. Recent work by Johnson and Kaplan [1991, pp.51-58, 93-123] suggests that managerial accounting – or what we have called a "productionist" outlook – was subordinated to financial accounting in the twentieth century. For example, early twentieth century efforts to develop cost information to trace a firm's overall profitability to profits earned on individual products – "strategic product costing" – all but disappeared by 1914. Twentieth century auditors have gathered product costs not to assess the relationship between products and manufacturing processes but to value inventory on balance sheets. Similarly, the modern multidivisional corporation left costing considerations to its subdivisions and adopted aggregate financial indicators, like return-on-investment, to evaluate divisional performance.

This paper suggests that Johnson and Kaplan place early twentieth-century cost accounting within too restrictive an organizational frame, namely, the rise of the modern corporation. By reconceptualizing industrialization as an organizationally diverse and contested (that is, socially constructed) process, we have discovered that managerial accounting flourished in surprising places, where it was put to surprising ends. In addition to its nineteenth-century goal to improve production, cost accounting became the centerpiece of a twentieth-century associational program to regulate competition. Like the modern corporation, whose ends we now know were to diminish both costs and competition, trade associations were driven by efficiency and distributive ends. In uniform cost accounting, associationalists found means to achieve both ends by narrowing the distinction between them.

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