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# Accounting for Rationality: Double-Entry Bookkeeping and the Rhetoric of Economic Rationality<sup>1</sup>

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This article addresses claims made by Weber, Schumpeter, and Sombart concerning the importance of double-entry bookkeeping. They argue that accounting played a key technical role in enhancing rationality and furthering the development of capitalist methods of production. The history of accounting methods and practices from the Middle Ages to the 19th century is surveyed in order to evaluate these arguments. Two important dimensions of accounting are discussed: the rhetorical and the technical. The argument is that, as rhetoric, accounting must be understood as an attempt to convince some audience of the legitimacy of business ventures. Goody's analysis of writing and literacy is applied to the development of accounting as a technique. As a practical method, double-entry bookkeeping appears to have increased "rationality," but the rhetorical side of double entry is also critical. The conclusion is that the significance of double-entry bookkeeping can be appreciated only if its rhetorical and technical aspects are considered.

## DOUBLE ENTRY, RATIONALITY, AND CAPITALISM

What advantages does the Merchant derive from Book-keeping by double-entry? It is amongst the finest inventions of the human mind. [GOETHE]

Accounting is hardly a glamorous activity; repetitious, detail oriented, and methodical, it is not a subject that quickens the pulse. Accounting, it seems, is as exciting as adding up a long column of numbers. Perhaps

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this image explains its neglect by sociologists. Yet some dramatic claims have been made about the relationship between accounting and both rationality and capitalism by such prominent social theorists as Weber, Sombart, and Schumpeter. The common thread in these claims has been the idea that the emergence and development of accounting, as a practical technique used in business, is closely linked to the emergence of capitalism and the development of rationality. These are intriguing claims about such a seemingly innocuous activity.

Weber's discussion is the best known. Rational capital accounting is a crucial component of his definition of modern capitalism. In his words, "The most general presupposition for the existence of this present-day capitalism is that of rational capital accounting as the norm for all large industrial undertakings which are concerned with provision for everyday wants" (Weber [1927] 1981, p. 276). For Weber, "rational capital accounting" involves "the valuation and verification of opportunities for profit and of the success of profit-making activity by means of a valuation of the total assets (goods and money) of the enterprise at the beginning of the profit-making venture, and the comparison of this with a similar valuation of the assets still present and newly acquired, at the end of the process" (Weber [1956] 1978, p. 91).

Accounting makes it possible for capitalists to evaluate rationally the consequences of their past decisions. They can calculate exactly the resources currently available to them and those that will be forthcoming in the future. Capitalists can use the information provided by an account to assess and compare various alternatives for investments.

Rational capital accounting, in conjunction with calculable law, rational technology (mechanization), free labor, and the commercialization of economic life, is, for Weber, an element in a general process of rationalization that is both the precursor to and the consequence of modern capitalism.<sup>2</sup> Accounts use money as their unit, and, "from a purely technical point of view, money is the most 'perfect' means of economic calculation. That is, it is formally the most rational means of orienting economic activity" (Weber 1978, p. 86). Weber considered double-entry

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<sup>2</sup> Cohen emphasizes the centrality of capital accounting in Weber's framework: "The single most general presupposition of modern Western capitalism as Weber conceives it is that of rational capital accounting as the norm . . . [it] provides the lynch-pin that unites [calculable law and other necessary elements] as presuppositional foundations for the modern capitalist industrial enterprise" (Cohen 1981, p. xxxiii).

bookkeeping the most highly developed form of accounting (Weber 1978, p. 92).

The connection that Weber draws between double-entry bookkeeping and rationality and capitalism is echoed by others. Joseph Schumpeter argues that a “rational attitude” follows from economic activity in general. But, he says, “Capitalism develops rationality and adds a new edge to it in two interconnected ways. First it exalts the monetary unit—not itself a creation of capitalism—into a unit of account. That is to say, capitalist practice turns the unit of money into a tool of rational cost-profit calculations, of which the towering monument is double-entry bookkeeping. . . . We will notice that, primarily a product of the evolution of economic rationality, the cost-profit calculus in turn reacts upon that rationality; by crystallizing and defining numerically, it powerfully propels the logic of enterprise” (Schumpeter 1950, p. 123).

Like Weber, Sombart makes double-entry bookkeeping an important component of modern capitalism. “The very concept of capital is derived from this way of looking at things; one can say that capital, as a category, did not exist before double-entry bookkeeping. Capital can be defined as that amount of wealth which is used in making profits and which enters into the accounts” (Sombart 1953, p. 38). Furthermore, according to Sombart, “Through double-entry bookkeeping possibilities and stimulants were created so that the ideas inherent in the capitalistic economic system could come to full development: the ideas of acquisition and economic rationalism” (Sombart, quoted in Winjum [1972], p. 21; also see Sombart [1967], pp. 125–27).

The spread of double-entry bookkeeping is explained in terms of its technical superiority. Within the capitalist context, market competition (the “battle of man against man on the market”) was for Weber “an essential condition for the existence of rational money-accounting” (Weber 1978, p. 93). For-profit enterprises would not survive if they were not sufficiently profitable (Weber 1978, p. 97). Enterprises that embraced the double-entry method enjoyed a technical advantage over those that did not, and, in the long run, the latter would be driven out of the market. Weber argued that, in the precapitalist context of antiquity, the use of slave labor made rational cost accounting impossible and that this was one reason why capitalism failed to develop in ancient society (Weber [1909] 1988, pp. 65–66).

Both Weber and Sombart, and, to a lesser extent, Schumpeter, postulate a close relationship between capitalism, rationality, and the development of double-entry bookkeeping. They emphasize that double-entry bookkeeping contributed to the historical emergence of a “rational worldview.” Accounts constitute part of the conceptual tool kit that persons

in business use in reflecting on the consequences of their past decisions in considering present alternatives.

The central role played by accounting in rational decision making is also emphasized in modern accounting textbooks. Accounts provide technical information on the outcome of previous business actions (Littleton and Zimmerman 1962, pp. 5, 7, 50). They can render an accurate assessment of the relative success of particular investments and thereby facilitate the pursuit of higher profits (Istvan and Avery 1979, pp. 5, 8). Accounts also provide a record of current assets and so indicate to the businessman the economic means at his disposal (Chambers 1966, pp. 47, 81, 96). In both ways, accounts help make decision making more rational and so contribute to the maximization of profits (Chambers 1966, p. 341; Parker 1969, p. 15).

The affinity between accounts and rationality seems even more plausible if we consider standard models of rational choice. Rational choice, according to the utility-maximization model, involves the measurement of the subjective expected payoffs from a set of alternatives and the selection of that alternative associated with the highest expected payoff (Gardenfors and Sahlin 1988, pp. 1–13). What accounts provide is the information necessary to measure and compare the alternatives in the set. They allow someone to estimate the probabilities of success and the possible payoffs associated with the various alternatives.

Despite making these claims for the importance of double-entry bookkeeping, sociologists have done little to evaluate or document them. Economic historians and students of accounting history have done extensive work on the history and importance of accounting. But, with few exceptions, there has been little attempt to link this specialized history with the broader claims made by Weber, Schumpeter, or Sombart.<sup>3</sup>

In this article, we reconsider double-entry bookkeeping in the light of these claims about its general significance. We analyze the development of accounting and examine why various audiences have found accounting persuasive and how much the technical superiority of double-entry bookkeeping explains its diffusion.<sup>4</sup> Underlying our examination is the belief that the best way to understand such broad and sweeping historical changes as “rationalization” is to decompose them.

<sup>3</sup> Two exceptions to the former rule are B. S. Yamey (1964) and Sidney Pollard (1964, 1968), who both reject a strong version of the Sombart thesis. But see McKendrick (1970) for an argument against Pollard's.

<sup>4</sup> We do not assess whether the double-entry method accounted for the emergence of capitalism in Western Europe. This question can certainly arise, given the grand claims made on the behalf of double entry, but to answer it we would have to undertake a comparative analysis of European and non-European accounting history, and the evidence for the latter is simply much too sparse.

Our historical evidence is drawn largely from Italy and England. We selected these two countries because, for the period from the late Middle Ages to the 19th century, first Italy and later England were leaders in capitalist economic production and technique. In addition, we obtained a sample of accounting textbooks over many centuries through the Goldsmith's-Kress Library of Economic Literature.<sup>5</sup> From accounting textbooks we can learn both the state of the accounting art and the kind of claims that were made about double-entry accounting.<sup>6</sup>

We contend that rationalization, even as a general historical process, has an important rhetorical aspect.<sup>7</sup> The rationalization of life has been more than an overall increase in the "calculability" or rationality of decisions. It has also been a change in the rhetoric used to represent decisions. The commonsense meaning of the term "rationalization" highlights this aspect.<sup>8</sup> A double-entry account is an "account" or interpretive framing of some set of business transactions, and it has a rhetorical purpose.

Sociologists from many perspectives have appreciated the importance of how individuals frame, interpret, and understand their actions. People both act and provide accounts of their actions. From Weber and Giddens, we are reminded that the "subjective" interpretations put on acts are at least as important as the "objective" acts themselves. Sometimes the purpose of these frames is simply to make sense of an act, but frames are also important as a way to document or establish the *legitimacy* of action. When used this way, an interpretive frame constitutes a form of rhetoric: its purpose is not simply to inform but also to convince.

Double-entry bookkeeping is an interpretive frame that is not usually classified as rhetoric. Economic accounts are ordinarily considered a form of neutral, technical information. They allow the precise measurement of assets and liabilities and profits and losses that businesspeople need

<sup>5</sup> This library combines the holdings of Goldsmith's Library of Economic Literature (University of London) with those of the Kress Library (Harvard University). The Goldsmith's-Kress Library is probably the single best source for Western European economic and business history. Our sample consists of all the English accounting textbooks in this collection through the 18th century, as well as other translated texts.

<sup>6</sup> It is impossible to do a survey based on actual accounts. Only a few sets of accounts have survived, and even fewer are published or publicly available. Basil Yamey, the foremost scholar of accounting history, claims that there are fewer than 20 sets of account-books from the 1500–1850 period of British history that have been examined by historians (Yamey 1981, pp. 128–29). The situation is much worse for other European countries.

<sup>7</sup> By rhetoric we simply mean techniques that are used to make a convincing or persuasive argument. Kenneth Burke argues that the function of rhetoric is to induce action or the attitude that precedes it (Burke 1969, p. 42).

<sup>8</sup> This is consistent with Scott and Lyman's (1968) conception of accounts.

to make their profit-maximizing decisions. These are the attributes of accounting stressed by Weber, Sombart, and Schumpeter. Contemporary accountants and accounting historians agree on this image of accounting.<sup>9</sup> Accounts appear to have more to do with the rationality of decisions than with the rationalization of decisions. Our focus on the rhetorical dimensions of business accounts is in contrast to their presumed technical nature. Looking at a formal mode of interpretation whose rhetorical dimensions seem to be its weakest provides a rigorous test of the importance of rhetoric.

We also argue that the changes in accounting practices had important cognitive consequences. According to Sombart, the central idea of capital itself was engendered by double-entry bookkeeping.<sup>10</sup> Double-entry bookkeeping created new categories for classifying and evaluating business transactions. It was a technique that helped to organize and make sense of the business world. Consequently, the relationship between accounting and behavior was not a unilateral one: double-entry bookkeeping was devised to account for business transactions, but once established, it altered those transactions by changing the way businessmen interpreted and understood them.

#### RHETORIC AND DOUBLE-ENTRY ACCOUNTING

The present treatise will serve all their needs with regard to accounts and recording, and for this reason only do I insert it. I therefore intend to give sufficient rules to enable them to keep all their accounts and books in an orderly manner. . . . The second thing looked for in business is to be a good accountant and sharp book-keeper and to arrive at this, as we have seen above, we have regular rules and canons necessary to each operation, so that any diligent reader can understand all by himself. . . . The third and last thing necessary is that all one's affairs be arranged in good order so that one may get, without loss of time, all particulars as to the debit and also the credit of all of them, as business does not deal with anything else. This is very useful, because it would be impossible to conduct business without due order of recording, for without rest, merchants would always be in great mental trouble.  
[FRATER LUCAS PACIOLI (1494) 1924, p. 1]

<sup>9</sup> The rhetorical aspect of accounts is not something about which ordinary people are unaware. Personal income tax forms and company balance sheets are often modified to make someone look honest or profitable. But the rhetorical effectiveness of accounts is premised on their ability to look factual, objective, and neutral. It is these latter qualities that are usually used to characterize accounts.

<sup>10</sup> See our discussion above.

This is Pacioli's introduction to his famous treatise on the double-entry method, published in Venice in 1494. Pacioli's is widely recognized as the first and most influential textbook on the technique of double-entry bookkeeping (Taylor 1956, p. 182). Pacioli, a Franciscan monk and mathematician, did not invent double-entry bookkeeping, but his text provided a detailed exposition. The technique was developed by merchants in northern Italy sometime during the late 13th or early 14th centuries (Yamey 1956*a*, p. 1; Winjum 1972, p. 39).<sup>11</sup> What was characteristic of double-entry methods was the fact that all transactions were entered twice, once as a debit and once as a credit. As explained by Pacioli, the debit side pertained to debtors, while the credit side pertained to creditors (Pacioli 1924, p. 24). The distinction between debit and credit, however, has become largely conventional.<sup>12</sup>

An example can be found in the stock ledgers used to record transactions in the shares of the East India Company.<sup>13</sup> These ledgers were kept by the company, which used the double-entry method, and each shareholder had a separate account. Every sale or transfer of company stock between shareholders was entered twice: as a debit under the account of the seller and as a credit under the account of the purchaser (debits were recorded on the left-hand page, credits on the right). In general, accurately kept books would be in equilibrium: the sum total of debits would equal the sum total of credits. A trial balance could be used to ascertain the accuracy of the bookkeeping. Furthermore, the double-entry framework made it possible to keep accurate records of the amount of capital invested in an enterprise as well as of profits and losses (Yamey 1956*a*, pp. 7–8). One could precisely measure the extent of an investment and how it had performed.

Pacioli's text on double-entry bookkeeping had its own rhetorical agenda. He tried to convince his readers of the utility of this particular method of keeping books. More important, the method he prescribed could be used to convince skeptics of the legitimacy of commerce in general and of the integrity of the business enterprise in particular. James Aho (1985) shows how Pacioli's method of double-entry bookkeeping

<sup>11</sup> The Italian origins of double entry have been common knowledge for a long time. Colinson (1683, p. 1) explicitly attributes the method to them.

<sup>12</sup> For example, in modern American accounting, if a company purchases some inventory with cash, the transaction is recorded in the cash account as a credit and in the inventory account as a debit (Istvan and Avery 1979, p. 40). The terms debit and credit are purely conventional and do not connote a decrease or an increase. Yet the fact that the transaction is entered twice (as a debit and as a credit) means that the double-entry method is still being used.

<sup>13</sup> See, e.g., stock ledger D, covering the period from October 3, 1711, to June 24, 1715, India Office Library, L/AG/14/5/2.



corresponded in form to classic Ciceronian rhetoric.<sup>14</sup> The elements of an account, as set forth by Pacioli, were the *inventio* (the inventory), and the *dispositio* (memorandum, journal, and ledger). It was no coincidence that these corresponded exactly to the first two elements of an argument according to Cicero (Aho 1985, pp. 24, 25, 33). If Pacioli's methods were followed, the accounting books of a business would be structured as a convincing argument.

Pacioli also recognized the efficacy of pious invocations in establishing legitimacy and enhancing credibility. In his words, "The end or purpose of every business man being to make lawful, and fair enough profit to keep himself substantially; but he must always commence his affairs in the name of God, whose name must appear at the beginning of every manuscript, always bearing His Holy Name in mind" (Pacioli 1924, p. 4). This advice was well heeded by Italian merchants for centuries (Swetz 1987, p. 275; Yamey 1974, p. 143). Their account books invariably invoked the name of God and often appealed to the Virgin Mary and other relevant saints in elaborate visual presentations. English accounts were equally pious.<sup>15</sup> Sir Thomas Gresham's 1546 daybook began: "In the name of God, Amen. This present booke shalbe the Jornall called + apperteyning to me Thomas Gresham of London mercer. . . . Pleaseth God to geve my profytt and prosperytye to defende me from evell fortune losse and damage. Amen" (Ramsey 1956, p. 189).

Concern for the legitimacy of business was partly engendered by the papal prohibition on usury. It was a sin to charge interest on a money loan. Underlying the prohibition against usury was a more general philosophy of justice informed by Aristotelian thought and Roman law (Noonan 1957, pp. 21, 30–31; Le Bras 1963, p. 564). As set forth by Thomas Aquinas, the natural essence of money was as a measure of value or intermediary in exchange. The increase of money through usury violated this essence (Le Goff 1988, p. 29; Nelson 1969, p. 69; Noonan 1957, pp. 52, 55). Furthermore, according to the same Thomistic analysis, a just transaction was one characterized by an equality of exchange (de Roover 1974, pp. 337–38), one where each side received exactly his due. Interest on a loan, in excess of the principal, would violate the balance of an exchange between debtor and creditor and was therefore unjust (Ramsay 1962, p. xlvi). Nicholas Oresme's influential 14th-century tract on money

<sup>14</sup> It may seem odd and somewhat arbitrary to the modern reader that Pacioli would be concerned to frame his text on accounting in terms of classical rhetoric. But in the Middle Ages, rhetoric often served as a paradigm for knowledge, theology, and ratiocination in general (see McKeon 1942, pp. 11, 32).

<sup>15</sup> See, e.g., Coleman (1963, p. 3); Peele (1569); Hawkins (1689, p. 10); North (1714, p. 22); Webster (1735, pp. 14, 29).

is an example of an Aristotelian analysis.<sup>16</sup> Oresme argued that “it is natural for certain natural riches to multiply, like grains of corn. . . . But it is monstrous and unnatural that an unfruitful thing should bear, that a thing specifically sterile, such as money, should bear fruit and multiply of itself. . . . It is by this reasoning that Artistotle proves . . . that usury is against nature, because the natural use of money is as an instrument for the exchange of natural wealth, as has frequently been said. Anyone therefore who uses it otherwise, misuses it” (Oresme [1355] 1956, pp. 25–26).

Through debit and credit, double-entry bookkeeping explicitly documented the balanced nature of the transactions of a firm, thus proving the legitimacy and justness of the business. “The conclusion of the balance sheet, then, is not simply that such and such is the net worth of our business, but rather that such profit is morally legitimate. And it is so, because it arises from a fundamentally equitable and balanced transaction” (Aho 1985, p. 33). An account that followed Pacioli’s method of double entry would provide a powerful argument in favor of the legitimacy and integrity of a firm and its profits (Le Bras 1963, p. 560).

The rhetorical issues that Pacioli addressed have largely disappeared. Usury is no longer morally suspect,<sup>17</sup> and business is accepted as a right and proper activity. Yet accounting has remained a rhetorical device; an account still attempts to convince someone of something. What has changed over time is the message and its audience.

Between Pacioli and the 19th century, there were few changes in accounting theory (Winjum 1972, pp. 40, 108; Chatfield 1977, p. 52). There was a general theoretical consensus that the double-entry method was superior because it could solve so many accounting problems simultaneously. The double-entry method faced no serious rivals (Jackson 1956, p. 288). The methods described in Pacioli’s work are essentially the same as those set forth in Hugh Oldcastle’s 1588 text. Almost two centuries after Oldcastle, William Taylor’s book (1783) on “practical arithmetic” described the identical method. The one major attempt to introduce a new method of accounting into England occurred at the end of the 18th century and was a resounding failure (Yamey 1956*b*, pp. 313–14).

Despite this theoretical consensus, accounting practices were remarkably varied. Merchants in the 16th and 17th centuries seldom maintained the high standards of the double-entry method. Sometimes, for example, single-entry methods were adequate (Yamey 1964, pp. 118–20). When

<sup>16</sup> For the original argument, see Aristotle (1962, p. 22).

<sup>17</sup> Usury was, however, still an issue well into the 17th century in England, as the goldsmith bankers who charged Charles II interest in excess of the legal limit discovered (see Roseveare 1962, p. 173).

double entry was used, it was often sloppily done. Accounting practices varied across countries, industries, and individual firms. The application of double-entry accounting depended, in part, on its audience. This audience shifted in general from the proprietor alone to a larger more dispersed group of partners, coinvestors, shareholders, and even eventually the state, as capitalist forms became more sophisticated.

## RHETORICAL APPEALS TO CHANGING AUDIENCES

But in practice, Accompting is an Art of it self distinct; and  
Arithmetick to Book-keeping, is as Language to Oratory.  
[ROGER NORTH 1714]

For as long as people have bought and sold, they have kept records. Accounts in some form or other go back at least as far as 2300 B.C. in Egypt (Stevelinck 1985, pp. 11–13). Early medieval European accounts were simply crude narrative descriptions of transactions (Boyd [1905] 1968, p. 54; Yamey 1962, p. 19). An example of an English account from the early 14th century shows just how narrational early accounts could be:

Account of Maurice Hunter and Fynlay Sutor, bailies of the burgh of Strivelyn, given up at Dunbretan on the twenty-fifth day of January, in the year of grace above mentioned [1328], of the fermes of the said burgh for the two terms of this account. They charge themselves with £.36 received on the account of the fermes of the said burgh for the year of their account. Whereof, for their superexpenses made in the preceding account 40s. 1d. halfpenny. And in the duties to the abbot of Cambuskyneth and Dunfermelyn, the hospital of Strivelyn and the hospital of Torphichen, during the time of the account, £.23, 5s. 4d. And to the Friars Preachers of Strivelyn of the yearly alms of the king, 10. And for the building of a certain house for a kitchen for the use of the king, 53s. 4d. And in sundry carriages during the time of the account, 26s. 8d. Sum of this outlay, £.39, 5s. 5d. and a halfpenny. And thus they superextended 65s. 5d. and a halfpenny. [Quoted in Boyd 1968, pp. 47–48]

An account such as this was basically a rambling story with numbers. All kinds of information were presented and none of it in a tabular fashion. Italian accounts before the advent of double entry were equally narrational (Lee 1973, p. 137).

Early accounts served mainly to assist the memory of the businessman. Names, dates, the nature of the transaction, the transacting parties, and other details (some seemingly irrelevant to the modern mind) would be noted. Persons with long-term obligations, complex transactions, or simply poor memories would use accounts as little more than mnemonic devices (de Roover 1956, p. 173). For his entire life, the writer Jonathan

Swift kept detailed accounts of his daily expenditures for no other reason than to have the information recorded (see Thompson and Thompson 1984, p. vii). In this case, the audience for the account was the proprietor or record keeper alone. The account answered two questions: What do I own? and What have I done?

Concern with divine approval characterizes the accounts from the Middle Ages through the 18th century, which were often pointedly directed to a divine audience. Weber summarizes early merchants' precarious spiritual status with the adage "*Homo mercator vix aut numquam potest Deo placere*" (he may conduct himself without sin but cannot be pleasing to God; Weber 1981, p. 357). The frequent references made to God were more than a cynical attempt to provide divine legitimation for a set of mundane activities. They reflected the sincere hope of those keeping the books that they were gaining God's blessing and approval. God was invoked and appealed to directly.<sup>18</sup> In 1588, Hugh Oldcastle stated that "it behoveth him [the merchant] first in all his workes and busines to call to minde the name of God in all such writings, or in any other reckonings, that he shall beginne" (Oldcastle 1588, chap. 2). Christophle's 1547 work made similar claims (Christophle [1547] 1927, pp. 264–65). Likewise, the merchant Francesco di Marco Datini began each ledger with "In the name of God and of Profit" (Origo 1957, pp. 13, 114). As late as the 18th century there were frequent references to God.<sup>19</sup> Hatton's examples in his 1712 accounting textbook contained such references. His sample ledger opens: "*In the Name of God. Amen*" (Hatton 1712, p. 176; italics in source). His sample waste-books open in a similarly pious fashion. Early companies also sought God's blessing. The first cashbook of the Bank of England (established in 1694) opens with a pious *Laus Deo* (Giuseppi 1966, pp. 68–69). Divine approval was both a corporate and an individual matter.

For a time, double-entry bookkeeping was recognized as a vehicle for self-transformation. Not only could it record transactions, it could also make you a better person. Pacioli did not make these kinds of claims,

<sup>18</sup> A good example of an exordium comes from the ledgers of the Florentine company of Filippo Corbizzi, Jacopo Girolami, and Tommaso Corbizzi (1332–37): "In the name of God and of the blessed Virgin Mother Madonna St. Mary, and of St. John the Baptist and the Evangelist and of all the Saints, male and female, of Paradise, that by their holy pity and mercy they will grant us grace for a holy, long and good life, with growing honor and profit, and the salvation of our spirit and body" (quoted in Yamey 1974, p. 144).

<sup>19</sup> By the 17th century, some of the religious doubts concerning business were disappearing. In 1635, William Scott wrote concerning: "*sancta avaritia*, a holy covetousness" (Scott [1635] 1953, p. 36). In Scott's mind, piety and profitability could be combined.

but later authors did. According to John Mair, "The theory of this art or science is beautiful and curious, very fit for improving the minds of youth, exercising their wit and invention, and disposing them to a close and accurate way of thinking" (Mair 1757, p. vii).<sup>20</sup> Conversely, failure to adhere to this method aroused suspicion regarding one's character and resulted in degeneration. Those who neglected the method were "slothful" and "ignorant" and would suffer unfortunate consequences: "First, it causes trouble in mind and disquietness of body with hindrance in substance. Secondly, it is great shame and dishonesty to him that keeps not his book exactly. Thirdly, the evil keeping thereof so vexes the body that it breeds fevers and diseases" (Christophle 1927, p. 296). In 1711, Joseph Addison wrote in *The Spectator*: "This phrase [he has not kept true Accompts] . . . bears the highest Reproach; for a Man to be mistaken in the Calculation of his Expence, in his Ability to answer future Demands, or to be impertinently sanguine in putting his Credit to too great Adventure, are all Instances of as much Infamy, as with gayer Nations to be failing in Courage or common Honesty" (Addison [1711] 1965, pp. 187–88).

The transformation of self wrought by double-entry bookkeeping was, not surprisingly, conducive to capitalist activity. Its use signaled a prudent, disciplined mind. Its neglect signaled character weaknesses. Cast in these terms, the debate over double-entry bookkeeping became personal and moral. These normative arguments about the personal value of the double-entry method reflect a recognition of at least some aspects of what Weber characterized as a "rational ethos." Cautious, informed decision making and the avoidance of speculation, values promoted by double-entry bookkeeping (see Montage 1690, preface), became celebrated values and a crucial feature of advanced capitalist societies (Weber 1976, p. 76).<sup>21</sup>

Double-entry bookkeeping also became an important resource in managing principal-agent relations. Businessmen who had to rely on others to help them manage their affairs were naturally concerned to know

<sup>20</sup> In the 17th century, Sir Josiah Child made a similar, but more general, claim about the virtues of arithmetic: "Besides, it hath been observed in the nature of Arithmetick, that like other parts of the Mathematicks, it doth not only improve the Rational Faculties, but inclines those that are expert in it to thriftiness and good Husbandry" (Child 1668, p. 5).

<sup>21</sup> Weber was adamant that cultural components were essential to the emergence and development of capitalism: "In the last resort the factor which produced capitalism is the rational permanent enterprise, rational accounting, rational technology and rational law, but again not these alone. Necessary complementary factors were the rational spirit, the rationalization of the conduct of life in general, and a rationalistic economic ethic" (Weber 1981, p. 354).

whether or not they were being cheated. An international bank like that of the Medici family had agents in cities all over Europe. Such banks needed to determine the fidelity, honesty, and capability of their agents, as well as the state of their affairs (de Roover 1966, pp. 75, 84–85). For example, the Medici used audits as a vehicle for keeping track of large advances made by branch managers (de Roover 1956, p. 151). Similarly, English lords who hired managers for their estates were interested in the honesty of their subordinates (Stone 1962, p. 25; Davies 1968, p. 214), and merchants who had to rely on agents or “factors” in other cities needed to monitor distant transactions (Ramsay 1962, p. liii). Since the audience for the account was no longer directly involved in the relevant transactions, an account became more than just a mnemonic helper: it was now a primary source of information. Consequently, accounts had to be more systematic and complete and do more than just fill in the gaps in someone’s memory. A principal with many agents, such as the Medici bank, would require that the various accounts follow a standardized format. The accounts were arranged in a tabular fashion and transactions were grouped together under a common heading (e.g., “equity” or “expense”). “At first such records were kept in paragraph form: after an initial entry, some space was left blank for making one or two additional entries—for instance, to add interest—and for indicating how the settlement was made. . . . It was only gradually that all items concerning the same person were grouped together so as to form a running account. This result was achieved at first by leaving more space for additional entries and later by adopting the bilateral form” (de Roover 1956, p. 116). The audience for the accounts was separate from the record keeper. The question that this use of accounts answered for this audience was, *Am I being cheated?*

Double-entry bookkeeping could answer these new sets of questions. It provided organized books that could and did satisfy the need for simple mnemonic records or for documentation of an agent’s honest service (Winjum 1972, p. 82; Lane 1977, pp. 180, 184). Suitably bolstered with appeals to God, it could also satisfy the need to receive divine approval. But such rhetorical uses did not fully exploit the potential of double-entry methods. The double-entry method could also be used to satisfy the concerns of parties with whom a businessman had transactions. Such persons would be concerned to know that they paid fair prices, or that loans would be repaid, or that goods were of sufficient quality.<sup>22</sup> If their fears

<sup>22</sup> Roger North put it rather nicely when pointing out the need for everyone with business dealings to have some knowledge of the double-entry method: “It is pitiful to see, how strangely some Men of Quality and Fortune, are to seek in Accounts; and how they are blinded and bambouled by the Mists, that artful Men raise up

were not assuaged, disputes and even litigation were the likely outcomes. James Peele, the author of one of the earliest English textbooks on double-entry accounting, said in the preface to his 1553 edition that “it is to be thought that true and perfect reconyng, is one of the chief, the lack whereof, often tymes causeth, not onely greate discension, but also is an occasion of greate losse of time, and empoverishment of many, who by lawes, seke triall of suche thynges, as neither partie is well hable to expresse, and that for lacke of perfect instruccion in their accompt, whiche thyng might, if that a perfecte ordre in reconyng were frequented of all men, right well be avoided” (quoted in Murray 1930, p. 222). For Peele, as also for Christophle (1927, p. 264), the double-entry method could save time and litigation by reducing suspicion and ignorance. It allowed a perfect and unambiguous “reconyng.”

Writing from Naples in 1458, Bennedetto Cotrugli's advice book to merchants summarizes several of the virtues associated with good record keeping in general and double-entry bookkeeping in particular. In a section in which he described the double-entry method, Cotrugli ([1458] 1961) exhorts:

We shall turn to the practice of [keeping] records. These not only preserve and keep in memory [all] transactions, but they also are a means to avoid many litigations, quarrels, and scandals. And they also cause literate men to live thousands upon thousands of years. . . . Mercantile records are the means to remember all that a man does, and from whom he must have, and to whom he must give, and the costs of wares, and the profits, and the losses, and every transaction on which the merchant is all dependent. And it should be noted that knowing how to keep good and orderly records teaches one to draw contracts, how to do business, and how to obtain a profit. And undoubtedly, a merchant must not rely upon memory, for such reliance has caused many persons to err. [P. 375]

Cruder forms of accounting were inadequate for the problems created by business ventures involving multiple investors. Double-entry bookkeeping first emerged in northern Italy, where mercantile capitalism developed. According to Schumpeter, capitalism as an economic system based on credit creation first appeared there (Schumpeter 1939, pp. 223–24). Trading ventures began to require more capital than a single individual was willing or able to invest. Partnerships and joint ventures, in which capital was pooled from different sources, needed a more rigorous method of bookkeeping. It became necessary to keep track of the exact amount of an investor's share in the capital and revenues of a firm (de

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before their Eyes, with Estimates, as they call 'em, and Representations of Values, drawn out of immense Books of Accompts, while the proper Judges know the Way neither into, nor out of them, and listen to the Jargon, as if it were Coptick, or Arabick” (North 1714, p. 7).

Roover 1956, p. 115).<sup>23</sup> Some commercial voyages had as many as 25 sponsors, and it was common for a clerk to be hired for the sole purpose of maintaining an accurate account of all the income and expenses associated with the venture. By the 13th century, the role of accounting was substantial enough to prompt a number of maritime cities to enact laws requiring ships to employ a scribe as a permanent member of the crew; Venice and Barcelona required big ships to employ two scribes. The ships' scribe had an official status, and his records were deposited with the government; in the case of a dispute, these were considered legal evidence (Byrne 1930, pp. 59–61). The audience for accounts was now a multiple one: a group of partners or investors. Their question was, What is my fair share of the revenues? (Littleton 1933, p. 153).

Concomitantly with the increase in the size of cooperative ventures came an increase in their longevity. Early mercantile partnerships often lasted for only one voyage. The firm was dissolved when the ship literally “came in” (Coornaert 1967, p. 257). Total assets were liquidated and profits and capital were divided among the investors. As commercial ventures became less ephemeral, the corporation and the firm's capital had to be maintained. According to its original charter of 1600, the British East India Company was to operate for only a few voyages. At the end of these, dividends to shareholders liquidated the capital and divided up the profits. Only when the firm was rechartered in 1657 was it established as a permanent, ongoing enterprise. After that, dividends could be paid out of profits *only* (Chatfield 1977, pp. 79–80; Coleman 1963, p. 19). Capital had to be preserved to allow the firm to continue operations (Winjum 1972, pp. 214–20; Littleton 1933, p. 211). The now-necessary distinction between capital and profits could be maintained by using double-entry accounting.

The change from sole proprietorship to partnership created another problem for businessmen and their accounts. As a proprietor, one need not be concerned with making a clear distinction between business affairs and private or personal ones. Living and trading were not separate spheres of activity, and the specific source of an expense or revenue was of little consequence (Littleton 1933, p. 86; Ramsey 1956, p. 201; Coleman 1963, p. 204). This distinction becomes problematic when more than one person has invested in a firm (Yamey 1964, p. 127). Business and personal affairs must be kept separate if an investor is to avoid having

<sup>23</sup> Indeed, Colinson credits double entry for the rise of joint-stock companies: “And its obvious to all Considering persons that this honourable and profitable Science of Book-keeping is the only help, that encourages many to joyn their small stocks together, and by so doing, often from a small foundation Erects a most admirable Trade” (Colinson 1683, p. 1).



the capital and income of his firm diverted to someone else's personal use (Weber 1981, pp. 226–28). Double-entry accounts could easily be used to maintain this distinction. A withdrawal of company funds by a partner had to be classified appropriately as a reduction in one's investment or as taking one's share of the profits, rather than as a business expense.

The development of joint-stock companies created wider audiences for accounts, ones even less familiar with the operations of a company. Furthermore, investors often diversified into a number of different ventures, making firsthand knowledge of these even less likely (Yamey 1962, p. 39). More than ever, they relied on accounts to provide the requisite information.

During the 19th century, two important changes occurred that influenced both accounting theory and accounting practices. First, with the Industrial Revolution came permanent, large-scale, fixed-capital investments. Fixed capital complicated the accounting task in two ways. It required that depreciation be incorporated into the valuation of assets, and it made the periodicity of business more arbitrary (Chatfield 1977, p. 92). Fixed capital is continuous capital. Since no ship arrives to signal that it is time to balance accounts and calculate profits, there is no “natural” period of production. Hatfield points out that “the use of fixed capital on a large scale increases incalculably the difficulty of determining the profits earned in any given year . . . [since] business is a continuum” (Hatfield 1968, p. 10). Consistent allocation of expenses and revenues to artificial accounting periods became necessary.

Second, with the advent of the railroads, depreciation was recognized as an important issue. People realized that the values of the large investments made in machinery, rolling stock, and rails were declining as a result of physical wear and tear (Littleton 1933, p. 223; Chatfield 1977, p. 95). As was true of any large fixed-capital investment, unless depreciation was accounted for, capital would not be maintained. Nonetheless, depreciation practices were varied and unsystematic throughout the 19th century. For example, there was little consensus about how to depreciate assets, and depreciation charges might not be counted during unprofitable years (Brief 1976, pp. 73, 106).

The 19th century also witnessed a great expansion in the numbers of joint-stock companies that brought together capital from a large number of investors. More than ever, it was necessary to keep track of capital and distinguish it from income. The greater salience of joint-stock companies brought about the second major change of the 19th century. Political pressure from shareholders and creditors brought about limited government intervention.

Government regulation mandated accounting standards for corpora-

tions. For example, England's Joint Stock Companies Act of 1844 required companies to present a "full and fair" balance sheet at the shareholders' meeting. This would, some believed, reduce the fraud and mismanagement that was prevalent (Edey and Panitpakdi 1956, p. 357). The statutes of 1844 and 1862 required that dividends be paid out of profits and that the capital of the firm be maintained (Littleton 1933, p. 214). It was particularly important that corporations with limited liability keep their capital intact. The legal rights of creditors would be infringed, if dividends in any way impaired capital (Littleton 1933, p. 240). The Regulation of Railways Act of 1868 forced British railway companies to render accounts twice yearly according to a uniform standard set forth in the act (Glynn 1984, p. 113; Littleton 1933, p. 235). More generally, the Companies Act of 1900 mandated compulsory and uniform annual audits for all registered companies (Edey and Panitpakdi 1956, p. 371). Such legislation helped to standardize accounting practices and underscore the essential distinction between capital, income, and profit. Here, the audience for accounts had been expanded to include the state. Accounts were now *legally* required to answer the questions, Are investors being cheated? and Is capital being maintained?

From the mercantile capitalism of the 15th century to the industrial capitalism of the 19th, accounting audiences (including divine beings) changed dramatically. In part, this involved a shift from particular and personalistic audiences (e.g., a business partner) to general and institutionalized audiences (e.g., a market) that coincided with the developing forms of the capitalist enterprise. Nearly all the demands made for accounting information by these disparate audiences could be met within a single framework: double entry. Accounting practice that adhered rigorously to the canons of double entry could maintain the distinction between capital and income that 19th-century law required and that co-investors in joint-stock companies demanded. It could also sustain the distinction between private expenses and corporate costs that partners would insist on. Double entry could certainly serve as an accurate record of business transactions or as a means to evaluate past investments. From the Middle Ages to the end of the 19th century, double entry has been *the* accounting method.

Rhetorical appeals to some audience remain an important component of contemporary accounting. Examples abound of accounts that have been manipulated to convey a desired impression, legitimate someone's performance, or bolster a particular position. For example, measurement of internal costs is not simply an objective undertaking; cost figures can be highly contestable and may be as much the outcome of intrafirm politics as they are a reflection of the actual situation (Covaleski and Dirsmith 1986, p. 195; Dalton 1959, pp. 31–32; Meyer and Rowan 1977,

pp. 350–51). Managers also try to negotiate numbers that will make them look good. Legitimacy is an important issue in managing intrafirm transfer prices (Eccles 1985, p. 81). Accounts are used to justify decisions and to excuse mistakes (Watts and Zimmerman 1979). Income numbers are sometimes artificially smoothed in order to enhance the retrospective appearance of predictability and certainty or to signal expectations (Barnea, Ronen, and Sadam 1976, pp. 110–11). During the conglomerate period of the 1960s, accounts were manipulated by financiers to project an image of perpetual growth in earnings (Espeland and Hirsch 1990, pp. 82–87). Corporate accounting standards are shaped by the interests of management (Watts and Zimmerman 1978). Such conflicts over numbers are unlikely to be permanently resolved since there is no objective way to measure such economic activities. Accounting standards are conventional, and remain arbitrary to a degree. They are neither right nor wrong, but only “generally agreed upon.”

Double-entry bookkeeping was able to satisfy so many demands of such divergent audiences in part because it is an abstract, formal system. This permitted the contents of the various categories to change as situations required, without the general framework's having to be reconceived. For example, Pacioli could never have anticipated double entry's ability to incorporate depreciation of fixed-capital assets. Yet, within the framework, depreciation could be defined as a particular kind of debit whose formal position in a set of accounts was no different from any other debit. Such abstraction brought with it great flexibility. Double-entry bookkeeping, as part of all businessmen's common stock of knowledge, was a handy solution, one easily adapted by numerical *bricoleurs* to new problems that emerged.<sup>24</sup>

#### AUDIENCE AND THE INSTITUTIONAL CONTEXT FOR DOUBLE-ENTRY BOOKKEEPING

To explain the spread of double-entry bookkeeping and the consensus about its superiority that developed requires an understanding of its institutional context. The commercial schools that flourished during the 14th and 15th centuries in northern Italy were important catalysts in the diffusion of the technique. These *scuola d'abbaco*, or schools of the abacus,<sup>25</sup>

<sup>24</sup> This conception of the double-entry method conforms with Swidler's conceptual prescription for culture. She argues that culture shapes action by determining the repertoire or “tool kit” out of which individuals create lines of action (Swidler 1986).

<sup>25</sup> Although its original reference was to the abacus, in Italy *abbaco* was used in a general sense to refer to anything related to computational skill, particularly as applied to mercantile problems (Van Egmond 1976, p. 10; Goldthwaite 1972, p. 413).

first appeared during the 13th century and eventually spread north along the major European trade routes (Swetz 1987, p. 21). In 1338, Florence had six such schools. By 1613, Nuremburg had 48 schools (Swetz 1987, p. 17). After having learned reading, writing, and rudimentary Latin, boys aged 10 or 11 were sent to these (mostly private) secondary schools to study commercial arithmetic. They were taught multiplication, division, fractions, the rule of three, and the principles of monetary systems by the *maestro d'abbaco*, the reckoning master, or one of his tutors (Van Egmond 1976, p. 126–28; Goldthwaite 1972, p. 425).

It is not clear exactly when double-entry bookkeeping was introduced into the curriculum. Before the 14th century, accounting was probably taught during the future merchant's apprenticeship. However, after 1500, the proliferation of treatises on accounting suggests that it was probably included in the formal curriculum of these schools (Goldthwaite 1972, p. 425). The education received at the *scuola d'abbaco* was practical and thorough. After completing this education, most boys were apprenticed for several more years to apply their mathematical skills or to learn other aspects of commerce. It was common for Venetian and Florentine merchants to send their sons to foreign branches of the family firm to serve as apprentices (Van Egmond 1976, p. 65). In England, young merchants typically got their training either through apprenticeship or at a commercial school. Regardless of where they were taught, young men were sure to learn the double-entry method (Charlton 1965, pp. 253–54, 259–62).

Florence was a center of abacus studies and probably a training center for the *maestri d'abbaco* (Grendler 1989, pp. 22, 308; Van Egmond 1976, p. 81). These reckoning masters were sought out by students who came from all over Europe to study with them. Theirs was a lucrative profession, and they enjoyed a respected status in the mercantile community (Swetz 1987, p. 283). Weber reports that, as late as the 16th century, German clerks would travel to Venice to study double-entry bookkeeping (Weber 1981, p. 225).

In addition to reckoning schools and apprenticeships that trained young men in commercial arithmetic and accounting, there was, during the late 15th century, a proliferation of accounting textbooks that also helped to diffuse the double-entry method.<sup>26</sup> Virtually no handbooks or guides for the young businessman described any other method. Beginning in the late 13th century, a distinctive genre developed that catered to the computational and accounting needs of merchants (Van Egmond 1976,

<sup>26</sup> In Italy, the first commercial arithmetic book was published in 1481 in Florence (Chiarino's *Questo e ellibro che tracta di Mercantantie et usanze de paesi*) only 17 years after printing first arrived in Italy (Smith 1923, p. 249; 1908, pp. 10–11).

pp. 12–13, 301; Goldthwaite 1972, pp. 432–33; Weber 1981, p. 224). Unlike most books, these were written not in Latin but in the vernacular languages of their intended audiences. They were written in a colloquial, idiomatic style, as though a conversation had been transcribed. They dealt almost exclusively with demonstrating the techniques in question and providing examples and problems using practical applications. In contrast with other arithmetic treatises, these provided no underlying mathematical theory for the techniques discussed, and problems were often illustrated with simple drawings. With these books, it was possible for a merchant to teach himself the arithmetic and the accounting technique he needed to conduct his business. Merchants often collected large personal libraries that included many of these practical guides to mathematics (Rose 1973). Swetz (1987, p. 288) suggests that merchants were the first occupational group in Europe to acquire professional libraries composed of references specifically written for their trade. A flourishing publishing industry emerged in northern Italy that helped to spread these “how to” books for merchants. By the end of the 15th century, in Venice alone, there were 268 printing establishments (Swetz 1987, p. 26). This genre soon spread to other European countries, including Germany, France, Portugal, and England (see, e.g., Malynes 1636, p. 5; Hill 1688, p. 48).

The result of such intensive training and the availability of books catering to mathematical concerns was, not surprisingly, the creation of a sophisticated numerate audience. Merchants prided themselves on their arithmetic skill and took pleasure in applying it in varied contexts (Goldthwaite 1972, p. 433). For example, Baxandall (1972, pp. 86–104) shows how merchants’ skill at proportions and geometric computations influenced the style and appreciation of 15th-century art. Goldthwaite (1972) describes the traits characteristic of Florentine merchants as “their extraordinary penchant for writing everything down, from petty expenses to the history of their city; their passion for keeping their personal arithmetic straight with the symmetry of double-entry bookkeeping; their fascination with the purely mathematical problems of these treatises, and finally their taste for perspective and the mathematical organization of space in art and architecture—all are part of a single intellectual whole with a strong mathematical flavor” (p. 433). These attributes could be found among the merchants from other areas as well (Tucci 1973).<sup>27</sup>

As an interpretive frame for a set of economic transactions, business

<sup>27</sup> Grendler summarizes the meaning of bookkeeping as follows: “Bookkeeping was more than a technique for keeping track of transactions. It expressed the Renaissance merchant’s almost naive belief that life would be profitable and good if he could organize rationally and record everything” (Grendler 1989, p. 322).

accounts are distinctive in their being written down in an almost completely numerical form. The legitimacy of numerical evidence is today completely taken for granted (such evidence is considered more objective and factual than other, more qualitative, forms of evidence).<sup>28</sup> But this was not always the case. The ability of numerical representations to form the basis for a convincing argument depended on the literacy and, especially, the numeracy of the audience (Cohen 1982, pp. 50, 105–7). Illiterate and innumerate audiences did not find numerical evidence especially convincing.<sup>29</sup> Historically, merchants and traders have been among the most literate and numerate groups in society, and so their appreciation for accounts is understandable (Thomas 1986, p. 111; 1987, p. 106; Cohen 1982, p. 16; Swetz 1987, p. 20). At the same time that audiences for accounts expanded beyond the business community, the levels of literacy and numeracy in the general population were rising. Once literate and numerate, these wider audiences were more easily persuaded by accounting information.

Businessmen were encouraged to adhere to the double-entry method by more than just their upbringing. Their dependence on credit meant that they were especially vulnerable to the expectations and standards of other businessmen. One's credit depended on one's reputation.<sup>30</sup> Any doubts concerning a man's probity or solvency could quickly lead to a suspension of credit and then bankruptcy (Earle 1989, p. 120).<sup>31</sup> This was underscored in the advice books for businessmen that repeatedly emphasized the need for a good personal reputation and the extent to which careful record keeping could enhance such a reputation.<sup>32</sup> As we

<sup>28</sup> The pariah status accorded "anecdotal evidence" in contemporary social science is another manifestation of this bias.

<sup>29</sup> The growth in the respectability of numerical representations in England is indicated by the exchange between Jonathan Swift, in his *Examiner* of November 23, 1710, and Arthur Mainwaring, in his *Medley* of December 4, 1710, concerning the relative merits of the war currently being prosecuted by the British government. Both men use *stylized double-entry accounts* to represent the merits and disadvantages of the war. In this instance, double entry truly has a rhetorical dimension (see Ellis 1985, pp. 55–56, 74–76).

<sup>30</sup> As Tucci puts it in his discussion of Venetian merchants, "Even kings and princes could not have aspired to the trust and credit enjoyed by a good merchant. Reciprocal trust and good faith in their dealings were the ethical elements which distinguished the tone of relations between merchants and which were the most important factors in their solidarity" (Tucci 1973, p. 367).

<sup>31</sup> As Defoe put it, "Credit is the tradesman's life" ([1745] 1987, p. 137; for more on the importance of credit, see also pp. 51, 132.)

<sup>32</sup> Cotrugli is emphatic on this point: "The pen is an instrument so noble and excellent that it is absolutely necessary not only to merchants but also in art, whether liberal, mercantile, or mechanical. And when you see a merchant to whom the pen is a burden or who is inept with the pen, you may say that he is not a merchant. And [a good

have seen, double-entry accounts documented a man's frugality, acumen, and industry. With personal qualities such as these, a businessman could maintain both his reputation and his credit.<sup>33</sup>

The spread of the double-entry method was an instance of institutionalization. Two factors that commonly engender processes of institutionalization are professions and the state (DiMaggio and Powell 1983, pp. 150–52). But for accounting these were not important until well into the 19th century.<sup>34</sup> The early institutionalization of accounting was produced by two things: education and mercantile networks. The specialized education of merchants, either in schools or in apprenticeships, familiarized them with the double-entry method. Equally important were the facts that the merchants were highly mobile and that they were embedded in an international network of debtors, creditors, customers, and suppliers. As Zucker has pointed out, the density and coherence of social networks can be an important determinant of institutionalization (Zucker 1988, pp. 28–31). Commercial networks helped diffuse the double-entry method from Italy over the rest of Western Europe. Once the method was diffused, formal adherence to it was maintained by the fact that every businessman operated within the context of a network of other businessmen. Reputation and creditworthiness within the business community were necessary for solvency and were maintained with the help of one's accounts.<sup>35</sup> Hence, double entry acquired what DiMaggio de-

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merchant] not only must be skilled in writing but all must keep his records methodically . . . and therefore I warn and encourage any merchant to take pleasure in knowing how to keep his books well and methodically. And whoever does not know [how to do this], let him get instruction, or else let him keep an adequate and expert young bookkeeper. Otherwise your commerce will be chaos, a confusion of Babel—of which you must beware if you cherish your honor and your substance" (Cotrugli 1961, pp. 375, 377).

<sup>33</sup> In this regard, the role of double entry is akin to that of the "negotiated information order" discussed by Carol Heimer. Double-entry accounts may or may not be rational from the individual perspective of the businessman. But the use of double entry becomes explicable, given his dependence on a network of creditors and his need to maintain his reputation (see Heimer 1985, pp. 397, 411). We are grateful to a reviewer for calling her discussion to our attention.

<sup>34</sup> Thereafter they become very important. For example, accounting standards spread in the 19th and 20th centuries when they were given legal force. Passage of a law that prohibited certain methods of calculation, or that prescribed others, obviously influenced the diffusion of accounting techniques.

<sup>35</sup> This international commercial network gave rise to other institutionalized features of early modern business life. One of the most important was the Law Merchant, a body of international law specifically applicable to merchants and mercantile problems. The enforcement of commercial contracts was difficult, if not impossible, in ordinary courts of law. Commercial instruments like bills of exchange were often not recognized, and trade frequently occurred between legal jurisdictions rather than within them. The Law Merchant was disseminated through the trading networks

scribes as the taken-for-granted quality of institutionalized practices (DiMaggio 1988, pp. 4–5).

Feldman and March maintain that the information organizations generate is often more important for its symbolic value than for its direct relevance to decision making. They suggest that information gathering offers “ritualistic assurance” that choice is being guided by the appropriate values. Instead of providing a prescription for action, information more often symbolizes competence, displays authority, inspires confidence, and affirms not only the legitimacy of decisions made but the appropriateness of the social values of intelligent choice (Feldman and March 1981, pp. 177–78).

Earlier, Meyer and Rowan (1977) argued for the legitimizing power of rational organizational structure. They contend that the formal structure of an organization may bear only a slight resemblance to the actual activities and relations within it. This “decoupled” structure is often more important as a legitimizing symbol than as a blueprint for organizational relationships. To put it another way, the legitimating myth of rational structure is a form of rhetoric used to convince various audiences of the rationality of an enterprise. As such, it is “useful” in different ways than those suggested by more literal interpretations. In our case, double entry was certainly a “legitimizing myth” for business, one with important symbolic values decoupled from purely utilitarian concerns. However, double entry was also a genuinely useful technology, and its rhetorical features do not undermine this. But focusing exclusively on the superiority of its technical qualities jeopardizes an appreciation for its rhetorical, ideological qualities.<sup>36</sup>

For centuries accounting practice did not reflect accounting theory. There was little theoretical change in the 300 years after Pacioli, but it took a long time for the technique of double entry to diffuse throughout Europe and to become rigorously adhered to by most practicing businessmen (Winjum 1972, p. 108). Ideally, double entry facilitates the “economic rationality” described by Weber, Schumpeter, and Sombart and

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that linked merchants in various parts of Europe. For useful discussions of the Law Merchant, see Plucknett (1956, pp. 657–70) and Baker (1979). See Malynes (1636) and Marius (1655) for original expositions of the Law Merchant.

<sup>36</sup> In his analysis of a very different historical setting, the development of “market culture” in the French textile industry after 1750, William Reddy concludes by noting the rhetorical side of money: “Calculations with money values are always at bottom rhetorical in nature, part of a struggle over the structure of human relationships. But one of the strengths of this rhetoric is that the existence of a rhetorical dimension is not admitted. Market language poses as exact and objective” (Reddy 1984, p. 330). Reddy’s point is consistent with our own. We are indebted to a reviewer for pointing out this work to us.



modern accountants. In practice, however, the full potential of double-entry accounting was rarely exploited (see, e.g., Connell-Smith 1951, p. 369). Accounts were infrequently balanced (Coleman 1963, p. 203), and, when a trial balance was struck, total debits often did not equal total credits.<sup>37</sup> Assets were rarely revalued (Pollard 1968, p. 118). The full potential of double entry was seldom exploited and only gradually was the double-entry technique adhered to more rigorously. It was centuries before practice caught up with theory. This divergence has been noted by critics of Weber and Sombart who point to it as evidence against any close connection between the development of capitalism and accounting techniques. Nonetheless, this gap between theory and practice is consistent with the importance we give to the rhetorical side of accounting. A method that was unanimously championed in theory provided symbolic benefits. That it was not adhered to in practice suggests that the practical benefits (in improving the rationality of decisions) were, for a long time, less important.<sup>38</sup> As Meyer and Rowan indicate, organizations attending to symbolic criteria often behave differently from those that adhere strictly to efficiency criteria (Meyer and Rowan 1977, p. 355).

It is difficult to disentangle the separate symbolic and technical contributions that double-entry accounting provided. One example through which it is possible to assess the relative importance of the symbolic significance of accounting is that of the 18th-century English overseas merchants. These merchants had powerful incentives to gain as big a technical advantage over the competition as possible. First, the evidence from bankruptcy rates shows that the overseas trade was among the most competitive and risky business environments (Hoppit 1987, pp. 59–69). Centered mostly in London, overseas merchants were members of the most sophisticated group of businessmen. They were thoroughly aware of the double-entry method and, because of the competition, had a strong incentive to use the most advanced techniques. In addition, because credit was so important for business (Brewer 1982, pp. 200, 206; Earle 1989, pp. 115–18; Hoppit 1987, pp. 25, 134, 160), it was critical that accounts be kept accurately. In the case of bankruptcy, the only record of an obligation or claim was the account entry. Aspiring merchants were advised to keep accurate books, not only because doing so would enhance competitiveness but because, if the business failed, books were the only

<sup>37</sup> Writing in the 17th century, Dafforne stated that only three occasions required a general balance: when the books were full; when the merchant retired; or when the merchant died (see Dafforne 1636, p. 48).

<sup>38</sup> We are obliged to Randall Collins for this point.

way to sort out everyone's claims (Hoppit 1987, pp. 171–72).<sup>39</sup> Merchants did employ the double-entry method, and so most extant sets of accounts possess the debit-credit system characteristic of double entry. Yet, in spite of sound technical reasons for fully exploiting this method in a competitive environment that put a premium on efficiency, merchants' accounts were usually badly kept (Grassby 1969, p. 748).<sup>40</sup> Clearly, the technical advantages of double entry were subordinate to the symbolic ones.<sup>41</sup>

## COGNITION AND ACCOUNTING

A merchant rightly resembles a cock, which, among other things, is the most watchful animal that exists. [FRATER LUCAS PACIOLI 1924, pp. 10–11]

Till now, we have viewed the development of accounting as a changing response to changing demands for legitimacy. But this is only a partial view of its role. There is a causal efficacy in accounting that helped to transform the ways in which business was interpreted and understood (Meyer 1986, pp. 348, 354). To provide an account is to provide a classificatory scheme. It is a cognitive device that sorts, orders, and names. Accounts frame an economic reality in a particular way. This raises the possibility that accounting did not simply react to economic development or the changing demands of changing audiences; it helped to shape them.

As a written record, an account embodies some of the changes that

<sup>39</sup> As Colinson put it, "If he [the merchant] be fortunate and acquire much, it [double entry] directs him the way to Employ it to the best advantage, if he be unfortunate it satisfies the world of his just dealing, and is the fairest and best Apologie of his Innocence and honesty to the World" (Colinson 1683, p. 1).

<sup>40</sup> This is not the only instance in which businessmen failed to do the "rational" thing. Faulhaber and Baumol note that, for hundreds of years, businessmen discounted future incomes without having the correct discounting formula (Faulhaber and Baumol 1988, p. 578). Similarly, although arithmetic computations are much easier to perform with the Arabic numeral system than the Roman numeral system, it took almost 400 years for the Arabic system to be widely adopted in Italy (Smith and Karpinski 1911). The diffusion of Arabic numerals was partly impeded by the status associated with the use of Roman numerals and the vested interests of those who specialized in their use (Swetz 1987, pp. 181–82). Also, as Weber points out, there was a stigma associated with the "column system" in Europe where it was "at first viewed as a disreputable means of securing an immoral advantage in competition" (Weber 1981, p. 224). Notwithstanding their competitive environment, businessmen failed to do the most rational thing or to follow the right formula.

<sup>41</sup> Of course, in general, badly kept accounts are better than no accounts at all. But in this instance the relevant comparison is between well-kept and poorly kept double-entry accounts.

occur in the shift from an oral to a literate culture. Many have described the profound significance of this reorientation. For example, Jack Goody argues: "Culture, after all, is a series of communicative acts, and differences in the mode of communication are often as important as differences in the mode of production, for they involve developments in the storing, analysis, and creation of human knowledge, as well as the relationships between the individuals involved" (Goody 1977, p. 37). An increase in the use of accounts in economic spheres of activity brings into those spheres some of the larger consequences of literacy. For instance, writing gives discourse a more permanent, objectified form. In a written form, discourse is less tied to the immediate context of persons, place, and time (Goody 1986, pp. 53–54). It can be scrutinized in a more general, abstract, and rational fashion (Goody and Watt 1963, pp. 321, 337; Goody 1977, p. 37). In short, greater use of the written account has important cognitive and, ultimately, social consequences (Ong 1986, p. 35). The changes brought by the transition to literacy were particularly acute among businessmen, who were usually among the most literate of social groups.

Simple narrative business accounts permitted scrutiny of past actions. Energy formerly expended on remembering or reconstructing past transactions could be devoted to other concerns (Goody 1986, p. 78; Thomas 1987, p. 106). The potential for scrutiny by other persons put a greater premium on accuracy, especially if those other persons had kept their own records. Written records also served to depersonalize transactions (Goody 1977, p. 15).

In a written form, meanings appear more "fixed," relative to oral forms. The practical interpretation of written documents typically presumes that the meaning of the text is not relative to the audience. It is assumed to be static. When the text is an account, this presumption of a fixed "meaning" amounts to a belief in an objective economic reality that can be accurately represented and measured.<sup>42</sup> It also assumes that what is useful about the past for predicting the future is fixed and can be known at the present. In a written document, the author relinquishes some of the ability to modify the message to suit the audience.

The use of tabular accounts had more specific consequences. Bilateral accounts, including double entry, involved the extraction of records of transactions from a continuous narrative and their placement in a tabular arrangement. The arrangement of items in a table involves the allocation of a distinct and unambiguous place for each item. By virtue of its particular row and column, that item has a definite spatial relationship to the

<sup>42</sup> Within accounting, this view corresponds to what Davis, Menon, and Morgan (1982) have termed the "historical record" image of accounting.

other items (Goody 1977, pp. 68, 71). Spatial relationships can then be used to represent conceptual relationships. All items in a particular row may pertain to transactions that took place on the same day, while those items in a particular column may all have to do with inventory or wages. Tables and lists encourage the systematic ordering of the items in them. The temporal ordering of a narrative can be recombined according to a conceptual order (Goody 1977, p. 81). Transactions can be classified under abstract categories like capital, wages, expenses, or income.

The extraction of items from a chronological flow inevitably involves abstraction and simplification. Extraneous detail can be identified and eliminated. Qualitative differences can be reduced to quantitative differences (Goody 1977, pp. 88, 89; 1986, p. 65). The amount of information is reduced as the items are decontextualized. What was formerly a story of “how Harold of Salisbury borrowed to buy a new cow” is now a debt for “two pounds ten shillings.” In accounts, transactions are interpreted and simplified (Littleton and Zimmerman 1962, p. 21).

Uncertainty is absorbed by the accounting framework. What March and Simon say about organizational classification schemes applies directly to organizational accounts: “The world tends to be perceived by the organization members in terms of the particular concepts that are reflected in the organization’s vocabulary. The particular categories and schemes of classification it employs are reified and become for members of the organization attributes of the world rather than mere conventions” (March and Simon 1958, p. 165). Decisions are made on the basis of highly edited information in which “inferences” about information—rather than direct evidence—are conveyed. This is termed “uncertainty absorption.”

As a classification scheme, double-entry bookkeeping edits and frames information. The complexity of economic reality is reduced, and decision makers are presented with a simple “bottom line,” one that does not reflect all possible interpretations and judgments. Since it is not confined to a single organization, the uncertainty absorption resulting from the double-entry method takes on an almost hegemonic quality.

Uncertainty absorption involves extraction and abstraction, which are fundamental to the double-entry method. Three sets of books are required: the waste-book (also known as the memorandum or memorial), the journal, and the ledger. Accounting textbooks from Pacioli’s on propose these same three sets of books. Transactions were first written in the waste-book, then posted to the journal, and finally entered in the ledger. Full details of transactions in chronological order were recorded in the waste-book. The journal represented an intermediate stage where information from the waste-book was checked for accuracy. When transactions entered the ledger, they were reordered and formalized. The de-

scription of the waste-book and ledger in Mair's 1757 textbook underscores the differences between narrational and tabular records, and illustrates the processes of extraction and absorption: "The *Ledger* is the *Waste-book* taken to pieces, and put together in another order: the transactions contained in both are the same, but recorded in a different manner. The *Waste-book* narrates things in a plain, simple, natural way, according to the order of time in which they were transacted; the *Ledger* contains the very same things, but artificially disposed, so as things of the same kind are classed together, and all the particular *items* and *articles* belonging to the same subject are collected and united" (Mair 1757, pp. 2–3; italics in source).

Abstraction and the reduction of quality to quantity are particularly significant in accounting. Formerly noncomparable objects are made commensurable: apples and oranges find a common denominator in monetary price. Commensurability makes it feasible to compare and evaluate alternatives. Trade-offs can be made, satisfying a precondition of rational choice. In an account, outcomes can be reduced to a single *numéraire*, money, and their relative profitability assessed. Accounts were a cognitive device that influenced the "premises of decision-making" (March and Simon 1958, pp. 138–39, 150–51). They determined the kind of information that was available to various audiences, including those making decisions within a firm. The availability of precise measures of capital and income or the existence of a common denominator for alternatives was important in structuring decision-making premises.<sup>43</sup>

The value of double-entry accounts for rational decision making has long been recognized. Early on, merchants understood that double-entry bookkeeping not only helped to justify and legitimize their transactions, it could also improve the quality of their decisions. In 1690, this quality was summarized by Stephen Monteage as follows:

Also excellent use might accrue by this consideration, that he, who daily sees his Accounts fairly and duely kept, knows how to steer the Fly-boat of his Expenses, to hoysse or lower his Sails of outgoing, according to Wisdom: Whereas the ungrounded young Merchant reckons at random, goes on and sees not the Labyrinth he runs himself into, but at haphazard spends prodigally, according to his vain surmize on the one side, of Profit where little or none is; on the other side, of small Expenses where they are

<sup>43</sup> Van Egmond (1976, pp. 40–41) suggests another important cognitive consequence of double-entry bookkeeping. Before double entry, business was viewed by merchants as a series of discrete ventures, with profits and losses calculated independently after each venture. Double entry made the periodization of business arbitrary, thereby facilitating a conceptual shift among merchants. Where formerly business had been understood as a series of discrete events, it came to be perceived as a continuous, abstract enterprise.

thick and threefold; and how many are there of these every where . . . that by not seeing or not willing to see and set before them the state of their Affairs, go on in a secret decaying of themselves, to the utter undoing of their poor Families! [Monteage 1690, preface]

This nautical metaphor, particularly apt for 17th-century merchants, describes the rationality that leads to better and more profitable decisions. The wise merchant has the precise knowledge of his financial position that permits him to know how and when to invest.<sup>44</sup> The ungrounded merchant, who lacks accurate accounts, invests at random.

It may seem implausible that cognition could be influenced by an accounting scheme. Yet consider that in 15th-century Italy, two of the other skills, in addition to bookkeeping, typically learned in commercial schools had important connections with artistic perception and painting technique. These skills were gauging and the rule of three. Gauging involved a set of methods for calculating the volume of irregularly shaped containers (not until the 19th century were shipping containers standardized). The volume of a container was estimated through approximation by a repertoire of forms (cylinders, cones, truncated cones, spheres, etc.). The rule of three, mentioned above, was a simple technique for calculating proportions. Given two equivalent proportions, that is,  $a/b = c/d$ , and given three of the terms,  $a$ ,  $b$ , and  $c$ , the merchant could solve for the fourth term,  $d$ , by applying the rule. Many commercial problems involved proportions (e.g., exchange rates, brokerage, division of profits). Both of the skills described above were very important to merchants.

In his discussion of 15th-century Italian painting, Michael Baxandall shows how artists exploited these two commercial techniques. Shapes were painted so as to engage the gauging skills both of the artist and the (learned) audience (Baxandall 1972, pp. 86–93). Visual proportions on the canvas made use of the viewer's sensitivity to proportion (Baxandall 1972, pp. 94–102). Artists responded to the ways in which these two skills had developed the visual perception of audiences. The cognitive style that characterized this era, the result of the special skills, experience, and education of the populace, created a distinctive “period eye” that influenced both the creation and the interpretation of art (Baxandall 1972, pp. 29–108).

In a contemporary setting, a number of studies document the cognitive aspects of accounting information. Experimental results show how auditors' perceptions are influenced by a variety of factors, including information order (Butt and Campbell 1989), prior expectations and hypotheses

<sup>44</sup> For similar claims about the usefulness of double-entry, see Dafforne (1636, p. 4); Colinson (1683, preface); Hawkins (1689, p. 1); North (1714, pp. 1, 4); Hamilton (1735, p. 1); Defoe (1987, pp. 15–16); and Paton (1922, pp. 6–7).

(Kaplan and Reckers 1989; Trotman and Sng 1989), and documentation format (Purvis 1989). Decision makers are influenced by whether accounting information is presented in a tabular or graphic form (Davis 1989; Desanctis and Jarvenpaa 1989). The cognitive dimension of accounting remains as important today as it was in Pacioli's time.

As a particular form of communication, the written tabular account provided a new framework for viewing and interpreting business transactions. These could now be cognized, summarized, and presented in a more "rational" framework (Ong 1986, pp. 37–38). Changes in the way that businessmen perceived their affairs brought about changes in the way those affairs were conducted (see, e.g., McKendrick 1970, pp. 49, 54, 56).

## CONCLUSIONS

David Eugene Smith, a preeminent historian of mathematics (1917), argues that the history of mathematics can teach us much about the history of economics and commerce. He says: "The transition from partnership in its various forms to the corporations of today may well be studied in the problems of commercial arithmetic" (Smith 1917, p. 223). We would extend this claim by suggesting not only that the history of commercial arithmetic, especially accounting, reflects changes in important social institutions but also that accounting helped engender and legitimate them. As capitalism developed, the organizational forms of business expanded and changed. Demands for legitimacy and accountability shifted as different and larger audiences appeared. What is remarkable is that one cultural object, the double-entry method, could satisfy the concerns of such disparate audiences for such a long time.

The characteristics of the double-entry system help explain why it was convincing to different audiences with different concerns. Its flexibility, which permitted it to be adapted to different situations, was partly a function of its formal, abstract character. The inherent flexibility of the system made it easier to adapt an old solution to new problems than to create an entirely new solution.

Accounting as a rhetorical device has been increasingly couched in a vocabulary of rationality. Accounts no longer need to reproduce Ciceronian rhetoric, adhere to Aristotelian models of justice, or make appeals to God, in order to establish the legitimacy of a set of transactions. Double entry has achieved its own legitimacy. As the embodiment of rationality, it can be used to legitimate decisions and transactions without reference to other systems of meaning. This change occurred in the context of the spread of literacy and numeracy, which fundamentally changed audiences' expectations and interpretations of texts in a way

that enhanced the autonomous legitimacy of accounts. Today, norms of rationality govern business decision making. They also govern the descriptions and justifications of decisions. Accounts are a way to display the rationality of decisions and thus enhance their legitimacy. They help to demonstrate that alternatives were considered, trade-offs were made, and potential outcomes compared. Business accounts, as a “rhetoric of numbers,” engender legitimacy because they document the rationality of decisions in an age when that form of rationality is legitimate.

Accounts, like the more recent decision trees and cost-benefit ratios, are often more important as justifications for decisions already made than as tools to make rational decisions. Rationality has become a compelling institutionalized creation myth for decisions. The recent incorporation of rational choice explanations into sociology has emphasized economic conceptions of rationality. The danger of this is in taking too naive and literal a view of institutionalized rational procedures like double-entry bookkeeping. The semblance of decisions may be rational, but not their substance.

One consequence of pervasive rationalization and institutionalization is that symbols of rationality become legitimate even if totally decoupled from the sphere of technique. As a symbol of rationality, double-entry bookkeeping legitimized business activities, even when the actual accounts did not conform, or conformed only loosely, to the strict method. If the issue for businessmen using double-entry accounts had been rationality, then why would their practice of keeping books have been so sloppy? The technical advantages conferred by double entry would have been lost. The symbolic advantages were foremost in those cases. The haphazard diffusion of the practice of the technique only affirms the rhetorical aspects we have emphasized.

Weber's analysis of accounting and its relationship to the emergence of capitalism emphasizes its technical superiority over alternative methods, the technical advantage it confers on those who use it, and its contribution to the promotion of calculation. In his analysis, Weber failed to appreciate or acknowledge the symbolic significance of accounting, its concomitant power to legitimate new capitalist forms independent of its technical prowess, and the contribution of these factors to its diffusion.

Weber was, of course, well aware that accounts were not simply a realistic rendering of the objective economic state of a firm. For example, he describes as “fiction” the impression created by double-entry bookkeeping that “different departments within an enterprise, or individual accounts, conduct exchange operations with each other” (Weber 1978, pp. 92–93). But Weber is quick to point out there is a technical reason motivating this fiction. It permits “a check in the technically most perfect manner on the profitability of each individual step or measure” (Weber



1978, p. 93, see also p. 106). Similarly, Weber argues that a cartel agreement “immediately diminishes the stimulus to accurate calculation on the basis of capital accounting, because *calculation declines in the absence of the enforced objective need for it*” (Weber 1978, p. 106; our emphasis). Nonetheless, the conditional fictive quality Weber granted to accounts persisted *only* because it was technically advantageous. In their discussion of the significance of double-entry bookkeeping for capitalism, neither Weber, Schumpeter, nor Sombart addresses the rhetorical power of accounting. All three focus exclusively on the technical superiority of the double-entry method.

All communication, whether verbal, written, numerical, or visual, attempts to persuade and can therefore be analyzed as rhetoric. For analytic reasons, we have purposely emphasized the distinction between the symbolic and the technical properties of double-entry bookkeeping. The distinction between the symbolic and the technical is never absolute. Nonetheless, it may be useful to speculate generally on the conditions under which the symbolic rather than the technical aspects of some form of information are more important.

First, consider the properties of the symbol and the character of the audience to which it is directed. In order to have symbolic import, a symbol must be evocative; it must be *interpretable* to some audience. The symbol itself must possess some acceptability or legitimacy. In the case of accounts, this depends most directly on the numeracy of the audience. The symbolic salience of numbers was established for an audience who were not only numerate but for whom numbers conveyed a special status. As time passed, accuracy and objectivity became principal elements of the special status audiences granted to numerical evidence.

In moving from the symbol to that which is symbolized, the converse is true. We would expect the symbolic significance of an object or text to be salient in situations where the activity or property that is symbolized is deemed suspect or illegitimate by some relevant audience. It is easy to imagine circumstances in which this might occur. An activity or idea would be more likely to require legitimation when it is new or when it is being proffered by a group whose status is precarious. For example, Hirsch (1986) studied the introduction and diffusion of the hostile takeover, a business innovation first promulgated by marginal entrepreneurs. The business establishment was initially outraged, but eventually co-opted the innovation to their own advantage. The shift in linguistic frames that accompanied hostile takeovers reflected their changing legitimacy. When first introduced by business outsiders, takeovers were characterized normatively in the flamboyant language of chivalry, warfare, and Westerns: the “bad guys” were always the corporate raiders. As takeovers became routinized and were enacted by firms within the estab-

ishment, their linguistic frames shifted to the more neutral legitimated language of gamesmanship. Hirsch argues that the use of a familiar genre to talk about this new technique facilitated its legitimation and diffusion (Hirsch 1986, pp. 823–29). The marginal status of commerce and of merchants in the late medieval period meant that commercial activity was of doubtful legitimacy. Double entry played an important role in legitimating these new activities.

Another situation in which the legitimacy of an idea or activity might be questionable is when it is put to a new use or extended to a new group. For example, Griswold points out the dilemma faced by younger sons of late 16th- and early 17th-century English country-elite families. These cadets were forced to reconcile their elite social status with a constrained economic opportunity structure that forced a large number of them to seek their fortunes in trade, a livelihood traditionally unsuitable for country gentleman (Griswold 1983, pp. 673–74). For members of the elite to begin undertaking mercantile activities posed a problem of legitimacy. Griswold shows how Jacobean dramas helped resolve the legitimation crisis faced by these individuals (Griswold 1983, p. 676). The symbolic side of the double-entry method was critical in legitimating the new legal forms for commercial activity (partnerships, joint-stock companies) that emerged. The familiarity and respectability of the double-entry method, when applied to the accounts of these new corporate forms, lent them an aura of legitimacy.

We might also expect the symbolic significance of something to be more important under conditions in which one wants to convey something that is valued but vague. In cases characterized by *critical ambiguity*, an obvious or objective means of conveying important values is lacking and symbols that indirectly express these values are employed. This is consistent with Feldman and March's argument that the symbolic significance of information is especially important in contexts in which there are no reliable alternative means for assessing a decision maker's knowledge (Feldman and March 1981, p. 178). Among 18th-century merchants, credit was essential and depended in large part on the reputation of the businessman. "Character" and "standing" determined one's ability to secure credit. Character was a critical but ambiguous quality that was signaled by the quality of one's bookkeeping.

Finally, the symbolic significance of an entity is likely to be greater when there exists a pressing need to document some value to a third party. For example, the use of econometric analyses may help to legitimate the plans of an organization in the eyes of third parties like investors or state funding agencies. Nobody in the organization need use or even read these analyses, but they help to document the efficiency and rationality of the organization (Meyer and Rowan 1977, p. 350). Accounts have

had symbolic importance when they have been used to justify economic activities to third parties like stockholders and government regulators.

Cultural forms like double-entry accounts are not exclusively rhetorical. One must be sensitive to the historical and cultural context in order to determine their rhetorical and technical significance. Throughout its history, the double-entry method has played a crucial rhetorical role in legitimating an expanding capitalist economic system. It has also played a technical role: altering the conceptual categories used to interpret business and to make decisions. In the past, accounting has been underestimated by social scientists—and understood one-dimensionally—as a technique for making rational decisions. We believe that accounting is both more important and interesting than that and deserves closer attention from sociologists. In the contemporary world, it is especially important to understand the symbolic power of technique and how it structures cognitive categories.

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