CHAPTER 19
ACCOUNTING, INFORMATION, AND COMMUNICATION SYSTEMS
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19.1 Introduction

Modern businesses need to generate and communicate information for two purposes: satisfying the needs of those external to the business, for example, shareholders, both actual and potential; and for internal, managerial purposes. Accounting plays a key role in both these respects: “Accounting has always concerned itself with information production, processing and reporting while management accounting has sought to provide managers with information-based intelligence” (Bhimani and Roberts 2004: 1). Moreover, “Accounting information enables different organizational activities to be classified uniformly and to be altered so that they become economically functional and managerially controllable” (Bhimani and Roberts 2004: 2). The purpose of this chapter is to examine the relationship between the
historical development of accounting, information, and communication systems (AICS) and that of business organizations since the late eighteenth century. Its findings are based largely on research conducted by accounting and business historians during the last quarter of the century, a period in which accounting history, once a niche area of research heavily focused on the development of double-entry bookkeeping, has been brought more firmly into the business history fold. This reflects the work of those historians who have focused their attention on the development of cost/management accounting practices within firms, and the "new" accounting historians who have examined the wider relationship between accounting and the organizations and society within which it is embedded.

19.2 An Overview of Key Developments

The information needs of those running businesses are many and varied, foremost amongst them being: What type of information? How is it to be collected and by whom? By what means is it to be conveyed, when, and to whom? In basic terms, information comes in two forms, financial and non-financial, and can be collected centrally within the organization, e.g. at headquarters by an accounting office, or within the various operating units of the business. Such information then has to be communicated to those who require it, and traditionally this was done through reports, either verbal or written. With the advent of modern information and communication technology (ICT), such reports are today often produced and communicated electronically.

Technological changes in communication methods since the second half of the nineteenth century, commencing with the telegraph and the telephone, have enabled the speedier communication of information. At the end of the nineteenth century, the development of typewriters and calculating and tabulating machines revolutionized the preparation and presentation of data and written reports, while single sheet and carbon copies enabled their wider dissemination (Yates 1989). Since the Second World War, developments in ICT have radically altered the nature of AICS. The advent of the computer, in particular modern real-time computing, together with bar code technology, e-mail, and electronic data interchange, has resulted in faster data collection and communication and compressed the time frame for feedback, control, and decision making, within both the production and accounting spheres (Tyson 1996).

1 The difference in meaning, as between different countries and even the same country at different points in time, of terms such as costing, cost accounting, and management accounting, the last of which appeared in the Anglo-Saxon world c. 1950, is a complex subject which is only just being investigated by historians. To avoid problems as to meaning, we will often use cost/management accounting as a catch-all term.

While technological change relating to office and, in particular, accounting procedures, has revolutionized the preparation and dissemination of information within an organization, in the production sphere technological change has altered the nature of the information required. In the late nineteenth century, the move towards more capital-intensive methods of production encouraged a move away from a concern with prime costs, i.e. the cost of direct labor and materials, to a concern with the total, or full, costs of the business. The development of full-costing systems in the late nineteenth and early twentieth centuries represents the first of six major phases in the development of cost/management accounting identified by Schweitzer (2000). It was followed, between the two world wars by, first, a move from an approach based on historical cost information to a standard costing approach, focusing on what costs should be, coupled with budgeting and, second, a concern with the issue of what costs were relevant for decision making (the variable costing approach 2). After the Second World War, Schweitzer (2000) identifies three major developments: relative contribution costing (1959), target costing (1963), and activity-based costing (ABC) (1988).

These developments in cost/management accounting during the twentieth century have occurred against the background of certain ongoing debates about fundamental, underlying issues in accounting such as the relationship between financial reporting and cost/management accounting, the relevance of full costs or variable costs to managerial decision making, and the role of financial information vis-à-vis non-financial information. The remainder of this chapter will seek to examine these underlying issues by bringing together historical evidence relating to the development of theory and practice within three major regions: the United States, Europe, 3 and Japan.

19.3 The Nature of Accounting and the Relationship Between Financial Reporting and Cost/Management Accounting

Traditionally, accounting has been seen as a neutral, value-free, technical reporting instrument and while some still view it in this way, others see it differently. "New
accounting profession and its organization; the use of auditors by business entities; the provision of financial statements to absentee shareholders; the development of stock markets; management accounting as a separate discipline; accounting theory; accounting standards; external regulation and self-regulation... (Yamey 1994: 380)

In the American context, Chandler (1977) has argued that it was the advent of big business from the late nineteenth century, and especially the rise of the multidivisional form (MDF) of business enterprise in the 1920s, which called forth developments in AICS, while Johnson and Kaplan (1987) expressed the view that it was prior developments in AICS which were vital in enabling the development of big business. The advent of the MDF increased "the volume of financial information and control...[and placed] it more firmly in the province of the accounting profession" (Armstrong 1987: 430).

The advent of legal status for companies, which in many countries began in the middle of the nineteenth century, together with the globalization of business and the growth of external financing of businesses and stock markets, has stimulated the development of financial reporting standards across the world. For modern global businesses, financial reporting is important because it "is a means of communicating financial information from the directors of companies to users of such information who are external to the management process of the company and who therefore do not have access to the internal management information system" (Thorell and Whittington 1994: 215). However, national accounting standards differ, sometimes substantially, with Nobes and Parker (2004) attributing this to differences in the external environment, culture, legal systems, providers of finance, the accounting profession, inflation, and theory, and to accidents.

Two distinct strands are observable in national standard setting: that of "codification", i.e. establishing a Commercial Code, whereby rules are set entirely in prescriptive law or statutory regulation, and which tend to favor the provision of information for creditors over that for shareholders; and that of common law, which tends to favor shareholders, where the legal framework establishes no mandatory rules and is essentially permissive, until legal rulings are made regarding actions that cannot be taken, such as those proscribing fraudulent financial reporting. In the Anglo-Saxon world, the common law approach has prevailed, while the former, or Continental model, became widespread throughout mainland Europe during the nineteenth and twentieth centuries, not least due to the impact throughout much of the region of the Napoleonic Commercial Code of 1807 (Walton 1993). Approaches can, and do, change; in the 1880s and 1890s, Japan developed a commercial code based on the Continental model but, after the Second World War, under Allied control, adopted a more Anglo-Saxon approach (Cooke 1991).

Despite national differences in approach, businesses are normally required, by law, to produce two audited statements on at least an annual basis: a balance sheet showing the assets and liabilities at the end of the accounting period and a profit and loss account showing the performance of the business during the accounting period. Different standards in financial reporting make comparisons of firms' results problematic, so attempts have been made to try to improve standardization. In Anglo-Saxon countries the main role in developing principles and practices to eliminate inconsistencies and actions which have led to financial crises has been played by professional accounting bodies. In the United States, Generally Agreed Accounting Principles (GAAP) were developed during the twentieth century and are now the responsibility of the Financial Accounting Standards Board, established in 1973, whose activities are overseen by the Securities and Exchange Commission (SEC). In Great Britain, a similar role is played by the Accounting Standards Board.

Attempts were also made during the late twentieth century to harmonize accounting rules on an international basis. Thus, on June 29, 1973, the International Accounting Standards Committee (IASC) was founded by the leading accounting bodies of Australia, Canada, France, Germany, Japan, Mexico, the Netherlands, Great Britain, Ireland, and the United States. The major objectives of the IASC were "to formulate and publish, in the public interest, accounting standards to be observed in the presentation of financial statements and to promote their world-wide acceptance and observance and, second, to work generally for the improvement and harmonisation of regulations, accounting standards and procedures relating to...

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4 Although they have Commercial Codes, both France and Italy have established bodies to control their securities' markets, modelled to some extent on the American SEC.
5 In 1970, the British profession established an Accounting Standards Steering Committee to issue Statements of Standard Accounting Practice. This body was renamed the Accounting Standards Committee in 1976, and its functions were taken over in 1990 by the Accounting Standards Board.
the presentation of financial statements’ (Kikuya 2001: 351). Within the member countries of the European Union (EU), attempts were similarly made to encourage harmonization of financial reporting through the Fourth (July 1978) and Seventh (June 1993) accounting directives of the EU’s Council of Ministers. Despite such developments, countries have often shown a high level of inertia, with different economic, social, and cultural environments militating against change.

At the beginning of the twenty-first century, however, new moves are taking place. In 2001, the IASC was replaced by the International Accounting Standards Board (IASB), and the IASs have been replaced by International Financial Reporting Standards (IFRSs). The European Union (EU) has passed legislation which requires the financial reports of all EU listed companies to comply with IFRSs beginning January 1, 2005, and there is a greater spirit of cooperation between the SEC and the IASB. Indeed, there are signs that more and more companies are moving towards adopting either the United States GAAP or IFRSs for consolidated reporting (Nobes and Parker 2004). The recent financial scandals surrounding Enron, WorldCom, Parmalat, etc., however, indicate that the development of national and international accounting standards is not, of itself, guaranteed to eliminate fraudulant or any other activity.

In Europe, many countries achieved some degree of internal uniformity in accounting through the development of charts of accounts, which specified the accounts to be kept, their relationship to one another, and the bookkeeping methods to be used. In their modern guise, charts appeared at the end of the nineteenth century, stimulated by the development of financial markets, an accelerating concentration of businesses, and a sharp increase in scientific thinking about standardization (Richard 1995a). Between 1900 and 1918, the concern was with “formal monism”; that is, a single chart for both financial and cost/management accounting purposes, but between 1918 and 1937, a new type of chart emerged aimed “at organizing and standardizing cost, and more generally management accounting” (Richard 1995a: 88). Between 1937 and 1945, the emphasis was on developing charts in which financial accounting was more independent, as with Goering’s chart under the German Reich in 1937, used also in France from 1942 following the German occupation. Although statutory charts of accounts were no longer a legal requirement in Germany after the war, their use has been enshrined in France since 1947 by the issuance of a series of Plans Comptables Généraux. Charts of accounts were also widely used in Soviet Russia and Eastern Europe prior to the fall of Communism. The marketization of former Eastern bloc countries, however, has led to significant divergences in practices. In Russia, the “old method, derived from Schmalenbach’s chart of accounts, has been preserved and adapted to the new market economy by being brought closer to American practices”, whereas in Romania, “for essentially political and cultural (not technical) reasons”, there was a break with the old Russian-inspired system and they have copied the French model (Richard 1995b: 320).

The nature of charts of accounts adopted has varied markedly from country to country, and Bechtel (1995) noted that the German chart allowed firms much more flexibility than the French one. The closest that the Anglo-Saxon countries have come to the use of charts of accounts has been the adoption, at certain times, of uniform costing systems (UCS) in some industries and sectors. UCS can help prevent “ruinous competition” by making manufacturers aware of their costs, thereby helping to prevent them setting prices at below cost and, by making cost information more widely available in a trade, help spread best practice. The adoption of UCS has often been aided by trade bodies, with Berk and Schneiberg (2005) finding that UCS provided a means to collaborative learning within American associations in intermediate or producer goods sectors such as lumber/timber and printing between c.1900 and c.1925. An added boost to the development of UCS was provided by the enactment of the National Industrial Recovery Act of 1933 (Fleischman and Tyson 1999). In Great Britain, similar schemes were developed in various sectors from the late nineteenth century (Boyns 1998), but their take-up was not always especially high (Edwards et al. 2003). Examples can also be found in Scandinavia where, during the 1930s, we find an emphasis on standardizing recording systems and calculation principles in Denmark (Israelsen et al. 1996), while in Sweden, “Uniform principles of full costing” were established in 1937. This was followed by the establishment of standard charts of accounts to support the costing procedures, the first being that of the trade association representing the Swedish mechanical and electrical engineering industries in 1943 (Ask et al. 1996).

That this event in Sweden occurred during the Second World War may be no coincidence. Several historians have highlighted the impact of war on cost accounting, not least because governments in many countries, concerned to control the prices that they paid for their war materials and to prevent profiteering, introduced cost-based controls. Loft (1986, 1990), for example, has claimed that controls introduced during the First World War in Great Britain had a significant impact, leading to costing “coming into the light”, though she possibly underestimates the nature and extent of cost calculation practices before 1914 (Boyns 2003b). In Germany, the introduction of the Goering chart in 1937 was designed to establish administered prices to be applied when supplying the state, while in 1939 and 1940 respectively, the Japanese Army and Navy set up their own cost accounting rules to control the price of munitions (Yoshikawa 2001). These rules were replaced in April 1942 by the Manufacturing Industry Cost Accounting Guideline, designed to control commodity prices and to increase the efficiency of management. Twenty years later, in November 1962, the Cost Accounting Standard was established, and though not legally binding on Japanese companies, social pressures ensured that it has become “the foundation for every company” (Yoshikawa 2001: 279).

While in many Continental European countries and Japan, cost accounting standards have often been imposed by the state, in Anglo-Saxon countries such an occurrence is rare, except in wartime. However, during the 1970s, and again from
the late 1980s, regulations were introduced in the United States determining the methods of costing to be used by companies engaged on government contracts, with a Cost Accounting Standards Board being established to oversee and monitor their implementation (Previts and Merino 1998).

The existence of charts of accounts or standards, whether imposed by law or adopted on a voluntary basis, does not, however, mean that companies are forced to use a specific costing system. Under the Japanese Cost Accounting Standard, for example, companies are free to implement their own cost accounting practices, since it does not "define or describe the practical methods" to be used (Yoshikawa 2001: 271).

19.4 Costing Theory and Practice

The link between costing theory, as espoused in accounting texts, and business practice is not well understood. Texts on costing were rare in the Anglo-Saxon world before the 1880s, though they were more prevalent in France from early in the nineteenth century (Boyns et al. 1997). In Germany, texts discussing cost behavior and the use of costing for forward looking management decisions appear from the late 1870s, with the first description of a German costing system coming in Lilenthal's 1907 book (Coenenberg and Schoenfeld 1990: 96-7). In Great Britain, the key development was the publication of Factory Accounts by Garcke and Fells in 1887, an act which stimulated the writing of other British costing texts. However, it was the United States which, before the First World War, came to dominate the production of English-language costing texts. In Japan, where the term cost accounting was not recognized before 1914, ten books on the topic of industrial bookkeeping appeared before the First World War, the first being Arisawa's bookkeeping for Manufacturers, published in 1887 (Kimizuka 1991). Since 1914, and more especially since 1945, the literature on cost and, subsequently, management accounting has burgeoned in all countries.

Knowledge of actual practices used by businesses prior to the late twentieth century, and even then, however, is limited due to the lack of systematic and comprehensive evidence, whether on a national or international basis. Even in the United States, where contemporary surveys have a longer pedigree, they were often limited in their scope and heavily biased in their coverage. Thus, traditional historians such as Solomons (1952), Garner (1954), and Chatfield (1977), largely based their studies of accounting developments in the Anglo-Saxon world on costing texts. While more recent historians have placed a greater reliance on archive-based research. Such research was initially focused on cost calculation practices in the Anglo-Saxon world, but is now being supplemented by work relating to other countries. Our understanding of developments in practice, however, remains piecemeal, reliant as it is on the patchy and limited survival of business archives and, within them, of accounting records. Nevertheless, certain of the generalizations made by traditional historians have been found wanting, not least that of the link between theory and practice.

19.4.1 Pre-1850

Despite the dearth of a relevant English-language literature on costing prior to the 1870s and 1880s, cost calculation in Great Britain has a long pedigree, stretching back, as in other countries, before the Industrial Revolution. Thus, industrial accounting, i.e. costing conducted within the financial books kept on the double entry system, was being conducted at the Staveley ironworks by the end of the eighteenth century (Edwards and Boyns 1992). During the second half of the eighteenth century, evidence of costing exists for the pottery manufacturer, Wedgwood (McKendrick 1970), the Scottish ironmaker, Carron (Fleischman and Parker 1990), as well as at the Mona Mine Company and the Cyfarthfa ironworks (Jones 1985), in addition to Staveley. Such evidence, together with that on Charleston Mills (Stone 1973), and the Dowlais and Consett ironworks (Boyns and Edwards 1997) during the first half of the nineteenth century, undermines Pollard's claim that entrepreneurs of the British industrial revolution "did not develop to any significant extent the use of accounts in guiding management decisions" (1968: 289).

Despite industrialization proceeding at a much slower pace, similar developments in costing can be found in other countries. Thus, in France, the Baccarat Crystalworks, the ironworks of Decazeville, Allevard, and Le Creusot, and the glass manufacturer Saint-Gobain began to utilize industrial accounting during the first half of the nineteenth century (Nikitin 1992; Boyns et al. 1997). In Japan, Kimizuka (1991) reports costs being calculated at the Nakai Ichizo soy sauce plant in Tokyo between 1788 and 1799 and in the first half of the nineteenth century, at the Ohtaya Kozo sake brewery at Ohta between 1835 and 1850 and the Tanabe family's iron and steel operations. In the United States, Porter (1980) noted a move from mercantile to industrial accounting at the textile mills of the Boston Manufacturing Company in the 1810s, while Tyson (1992) found evidence of the use of costs for stimulating cost reduction and enhancing productivity at the Lyman Mills in the 1830s.

19.4.2 1850–c.1920

While signs of systematic costing can be found in many countries before 1850, it is from that time that costing became more and more widespread. Thus, in Great Britain after 1850, costing became much more common (Boyns 2003), not only...
in sectors such as iron and steel and engineering but also in chemicals, where practice continued to lead theory up until the Second World War (Boyns et al. 2004). A similar situation can be found in Germany where the system of “dynamic accounting” developed by the iron and steel manufacturer, Thyssen, during the late nineteenth and early twentieth centuries predated Schmalenbach’s writings on this topic (Fear 2005). In Japan, cost calculation also seems to have become more widespread after 1850, examples including the Yokosuka shipyard c. 1865, the Tomioka spinning factory from 1870, the Onoda Cement Manufacturing Co. in the early 1880s, and the Sado Gold Mine of Mitsubishi & Co. Ltd. in 1897 (Kimizuka 1991).

Conventional wisdom, however, has it that it was the United States which became the frontrunner, at least in the Anglo-Saxon world, in relation to the development of both theory and practice after 1850. Chandler (1977) links the development of accounting to that of organizational forms, which he sees as beginning with single unit management, developed at the Springfield Armory and in textile mills before 1850, moving through multi-unit management at the American railroads and telegraph companies between 1850 and the 1880s, to the MDF developed at Du Pont and General Motors between the 1890s and the early 1920s. Chandler notes that the railroads developed new methods of financial, capital, and cost accounting, but their systems, which focused on the calculation of prime costs and the use of renewal accounting, were inappropriate for firms like General Electric, which wanted to know the profits made on different product lines or the rate of return generated on invested capital (ROI). It was Du Pont which first developed an integrated system of modern industrial asset accounting during the early years of the twentieth century utilizing ROI as a basic management tool for both evaluation and planning (Chandler 1977). By 1910, Du Pont was employing nearly all the basic methods that became commonplace later in the twentieth century for managing big businesses.

While Chandler sees modern management as a rupture in economic history, Hoskin and Macve (2000: 97) see the invention of administrative coordination not in economic terms but as a “combination of writing, examining, and grading, a means to inventing a new kind of economic world”. In a Foucauldian manner, this new grammatocentric method of “writing the world” provided managers with the knowledge and, therefore, power by which to control workers. Hoskin and Macve see the development of managerialism, i.e. the process by which accounting values could be placed on individuals as well as objects, as being developed initially at the American Military Academy at West Point during the early decades of the nineteenth century. It then spread via West Point’s engineering graduates to the Springfield Armory in the middle of the nineteenth century, to the American railroads in the latter decades of the nineteenth century, and to big business during the twentieth century.

Recent research by American business historians has also begun to question the extent to which the development of American capitalism should be seen purely in terms of the development of Chandler’s MDF. Berk and Schneiberg (2005: 74), in their study of developmental associations, and echoing the findings of Scranton (1997) in relation to specialty producers, have suggested that American capitalism was “a loosely coupled system composed of multiple—sometimes linked, sometimes autonomous, and sometimes conflicting—institutional projects, logics, or paths”. Not surprisingly then, the role of accounting generally, and cost/management accounting specifically, differed between the various types of institutions, as well as between firms within the same institutional form. Scranton (1997) notes that specialty manufacturers, producing small batches of a large number of different products, faced different costing problems from mass producers; therefore, generalizations as to the nature of costing systems used, whether for firms in a particular country, within a specific institutional framework, or even within a specific industry, will often be misleading.

19.4.3 C.1920–C.1988

19.4.3.1 Costing, Financial Reporting, and Strategic Management Accounting

The fundamental distinction in cost analysis is between full, or absorption, cost on the one hand, and variable cost on the other, and although accountants and economists did not make any substantial pronouncements on such issues until the period between the two world wars, recent historical research has revealed that some businessmen of the nineteenth century were aware of such distinctions. Nevertheless, the emphasis of many businessmen in the late nineteenth century was on keeping track of prime costs. However, as the size and capital-intensity of businesses increased, engineers became concerned with the issue of general business expenses, particularly those concerned with management, the depreciation of capital equipment, and the opportunity cost of the capital invested in the business. This concern led to attention being turned towards full, or absorption, cost, which brought with it concerns over the appropriate method by which to allocate overheads, or general expenses, to products and/or processes. Amongst the allocation bases utilized were labour, prime costs, machines, and machine hours, the most sophisticated method suggested in the early twentieth century being that of Alexander Hamilton Church, whose scientific machine rate method was employed by Hans Renold Ltd. in Great Britain, but failed due to inherent problems with the system and its requirement for the processing of large amounts of data (Boyns 2003).

The growing influence of accountants from the early twentieth century meant that even in those countries where they were initially distinct, especially the United States, costing and financial accounting increasingly became integrated within
a single accounting system, with the result that the key role of cost accounting came to be the provision of full-cost figures by which inventories could be valued for financial reporting purposes. Together with the failure to develop new ideas over the next fifty years, this subservience to financial reporting led Johnson and Kaplan (1987: 1) to claim that cost/management accounting had lost its relevance for managerial purposes: "Today's management accounting information, driven by the procedures and cycle of the organization's financial reporting system, is too late, too aggregated, and too distorted to be relevant for manager's planning and control decisions". Johnson and Kaplan advocated a return to the full-costing approaches adopted by engineers such as Church which led Kaplan and Norton, in the late 1980s, to promote ABC as the savior for American business.

Wells (1978), however, considered that engineers' full-cost systems had never been relevant for management decision-making purposes: "The average cost of production never could, and never will, be relevant for those classes of decisions where only the change in total costs and revenues are relevant" (Gormly and Wells 1992: 599). The advent of modern ICT, therefore, is irrelevant to the issue of trying to relate two things, i.e. overhead costs and individual units of production, that are not related. Wells argued that overhead allocation can only serve as a rough guide to rate-fixing and the pricing of unique goods or specific services, so the engineers of the late nineteenth and early twentieth century were wrong because their systems were at odds with economic theory. Johnson, the co-author, with Kaplan, of Relevance Lost, also subsequently came to be of the view that modern ICT was not the solution. Indeed, he came to "doubt the idea that companies can improve their cost performance by compiling better cost information", going on to suggest that "Cost accounting should always be viewed as an aspect of financial accounting, reporting and planning—never a tool for managing operations" (both quotes, Johnson 2002: 17). For Johnson (2002: 18), cost management "must be viewed as an aspect of enterprise system design, not an accounting exercise", and hence the need is to "manage the means", not "manage the results". This view reflects the Japanese approach developed since the Second World War where management accounting is not, as it is in the West, viewed as the provider of objective financial information, but rather used to service the strategic objectives of the organization, being viewed "primarily as a means of encouraging economically desirable behavior" (Yoshikawa et al. 1994: 3).

The Japanese emphasis on the use of management accounting within a long-term, strategic approach to business, rather than the American approach in which the concern was with short-term financial accounting ratios such as ROI, was suggested as a possible explanation for the relative success of Japanese firms compared with their American counterparts in the late twentieth century. The debate about the efficacy of the different approaches also affected Europe where the American approach has had an ever greater impact on local accounting practices since 1945. Some commentators advocated the adoption in the United States and the West more generally of Japanese accounting techniques, including target costing, which is not a costing system as such, but a process that turns on its head the conventional Western process, in oligopolistic markets, of using costs to determine prices. Under target costing, developed by some Japanese firms in the 1960s, a firm determines the price, which will enable it to obtain a predetermined market share, and then sets the target cost appropriately. Costs are then monitored through a conventional costing system to ensure that the target is not exceeded. Simultaneously, in the 1960s and 1970s, the development of automated manufacturing techniques, together with just-in-time (JIT) organizational structures led to a redefining of inventory valuation, cost control, and product costing (Tyson 1996). In response to the 1973–4 oil crisis, the motor car manufacturer, Toyota, developed the JIT management system, where cost reduction in the manufacturing process was supported by the use of Kaizen costing (Monden and Hamada 2000). As more was learned in the West about Japanese techniques, there developed a new approach to cost/management accounting, namely that of strategic management accounting, a technique which utilizes both financial and non-financial information.

19.4.3.2 Full Costing versus Variable Costing

Concern with the issue of which costs were relevant for decision making initially developed in the late nineteenth and early twentieth centuries as certain economists, such as Jevons and Marshall in Great Britain and Clark in the United States, and accounting theorists, such as Schmalenbach in Germany, became increasingly interested in the relationship between economic theory and cost. Schmalenbach formalized the distinction between fixed, semi-fixed, and variable costs in 1899 (Coenenberg and Schoenfeld 1990), but it is Clark who is usually credited with developing the concept that there are different costs for different purposes. The key point of his work was that, in making a decision, only those costs which would change, i.e. were variable, should be taken into consideration.

Which of a firm's costs are fixed and which are variable, however, depends on a number of factors, including the issue being considered, the nature of the business, the technology being used, and the time horizon (short-run or long-run) being considered. Clark's work led to a switch of attention in the literature away from Japanese techniques, including target costing, which is not a costing system as such, but a process that turns on its head the conventional Western process, in oligopolistic markets, of using costs to determine prices. Under target costing, developed by some Japanese firms in the 1960s, a firm determines the price, which will enable it to obtain a predetermined market share, and then sets the target cost appropriately. Costs are then monitored through a conventional costing system to ensure that the target is not exceeded. Simultaneously, in the 1960s and 1970s, the development of automated manufacturing techniques, together with just-in-time (JIT) organizational structures led to a redefining of inventory valuation, cost control, and product costing (Tyson 1996). In response to the 1973–4 oil crisis, the motor car manufacturer, Toyota, developed the JIT management system, where cost reduction in the manufacturing process was supported by the use of Kaizen costing (Monden and Hamada 2000). As more was learned in the West about Japanese techniques, there developed a new approach to cost/management accounting, namely that of strategic management accounting, a technique which utilizes both financial and non-financial information.

7 Strictly speaking, the contribution margin for a product is what one gets when one considers the difference between its sales price and direct cost.
we find the development of relative contribution costing, as attention increasingly focused on attempting to find determinants for costs traditionally considered to be fixed, certain components of fixed costs therefore acquiring the character of "relative direct costs".

Despite the theoretical developments surrounding variable costing since the 1930s, it is full-costing that has played, and continues to play, the dominant role in the practices of firms in most countries. It has been the norm since the 1920s in American and British companies, but to mention in France, where Rimaillot's sections homogenes method, developed between the wars, was enshrined in the Plan Comptable General of 1947. Berliet and Renault (motor vehicles), Pechiney (aluminium), and Saint-Gobain (glass and chemicals) used full-costing systems between the wars, and it was not until the 1950s that marginal costing made some headway in the French literature, though the impact on practice was small. In Germany, the Goering chart of 1937 led to the promotion of full-cost pricing (Busse von Colbe 1996) and despite no longer being a legal requirement after the Second World War, over 50 percent of German companies in the 1980s and early 1990s continued to use full-cost methods which had been standardized and applied in the 1930s, though this was often supplemented by indirect costing and contribution margin accounting (Scherer 1996).

German attitudes influenced the development of Sweden's "Uniform principles of full-costing" in 1933, where mass producers, such as Volvo (cars and trucks) and SKF (ball bearings), "argued for standard costing and for keeping cost calculation and cost accounting separate", while ASEA (heavy manufacturing) and Ericsson, producers of large ranges of differentiated products, "wanted to integrate cost calculation into the cost accounting system in the German tradition" (both quotes, Ask et al. 1996: 204). The standards subsequently adopted enshrined Clark's concept of different costs for different purposes. As for marginal costing, this was discussed in Sweden after 1949, but there was little change in practice, though some industries, e.g., steel, did take up marginal costing in the early 1950s. The costing standards implemented in the 1930s, however, as in Germany, have continued to hold a strong influence on Swedish costing practices.

19.4.3.3 Standard Costing and Budgeting

Standard costing and budgeting are techniques which can be used in conjunction with either full or variable costing methods. Whereas traditional (historic) costing determined the costs experienced in the previous accounting period, the essence of standard costing is to determine, in advance, what costs should be, thereby facilitating not only price setting but, more importantly, the efficient control of costs through a system of management by exception. Standard costing, however, is not a system of accounting for costs as such, but rather a system whereby standard cost figures are determined a priori, and then the variance between actual cost, as determined by the cost accounting system, and the standard cost are computed and reported to management. Managers can then immediately see where problems exist in the production process and take remedial action, quickly and efficiently.

Standard costing is generally considered to have emerged amongst mass producers in the United States during the scientific management era of the early decades of the twentieth century (Sowell 1973), though evidence of the use of "standard" or predetermined costs can be found in a number of businesses located in various countries before this. Although Harrison (1930: 26) claimed that, during the 1920s, "the standard cost plan has made immense headway", Fleischman has recently cast doubt on the rapidity of its take-up by American businesses, arguing that the development of scientific management theory, of which standard costing and variance analysis were major innovations, was probably far in advance of practice in the United States, and that a "vast schism between theory and practice may have existed, perhaps extending until the decade of the 1920s and probably until the 1940s" (2000: 600). Likewise, while the use of budgeting and ROI systems to plan and control the use of capital may have been pioneered by the Du Pont Powder Company between 1903 and 1915, it was only in the 1920s that their use began to develop at companies such as General Electric, United States Rubber, General Motors, and Sears Roebuck, which responded to the inventory crisis of 1920s by developing techniques that set and adjusted their production flows to carefully forecasted future demand (Chandler 1977).

The use of budgeting and standard costing in the United States was still only partial in the early 1930s (NICB 1931) but, according to Chandler, became adopted much more widely as a result of the Second World War which put the "capstone on the institutional developments of the interwar years" (1977: 476). The war brought small firms, usually as subcontractors for the larger concerns, into contact with modern methods of forecasting, accounting, and inventory control. However, the first comprehensive survey of costing practices in American business, carried out in 1946, suggested that only 4,050 out of the 187,370 companies surveyed, that is, just 2.2 percent, used a standard costing system (Black and Toivonen 1946). Furthermore, even by the mid-1960s, the use of standard costing was not comprehensive either within or across industrial sectors in the United States, reflecting in part the different circumstances pertaining to each firm and sector (PHES 1965).

Development of the use of standard costing and budgeting between the two world wars, however, was not confined merely to the United States. British firms such as Hans Renold Ltd., Austin Motors, BSA, and Dunlop, to mention just a few, have been found to have introduced them in the 1920s and 1930s (Boyns 1988a, 1988b, 2003d). In France, though no cases have as yet been found of the use of
standard costing before 1939 (Zimnovitch 1997), the use of budgeting was quite wide spread, with important pioneers in the 1920s being Commentry-Fourchambault and Les Imprimeries Delmas (Berland 1999; Berland and Boyns 2002). The traditional view that the United States developed these techniques in the 1910s and 1920s, and that they then spread rapidly in that country but only somewhat belatedly to Europe during the 1950s and 1960s, is clearly no longer tenable, at least in the cases of France and Great Britain (Berland et al. 2002). Despite some instances of early adoption in Europe, however, the utilization of budgeting and standard costing did grow dramatically after 1950, coinciding in part with the growth in business size and the accompanying adoption of the MDF organizational form experienced in many countries at this time, though archival research has shown that it was not always the largest firms which were at the forefront of early developments in the use of budgeting and standard costing (Boyds et al. 2000).

Despite archival revelations of the earlier usage of cost information for managerial purposes in many countries, stretching back to the British Industrial Revolution and before, the developments of the 1950s and 1960s are seen in the Anglo-Saxon world as marking a shift from cost accounting to management accounting, reflecting the “impact of a growing body of work in organisational theory and economics” (Previs and Merino 1998: 325). It was followed in the 1960s by a move away from concern with product costing to one with the activities over which individuals had control, or responsibility accounting (Scapens 1991), in which standard costing and budgetary control played an important, but not always a straightforward, role. Responsibility accounting represents a top-down “control over” philosophy of management, and increasingly became questioned as realisation dawned that processes aimed at achieving efficiency could be manipulated by employees to achieve the desired accounting results in a way that was not necessarily beneficial to the business. Attention thus tended to be turned towards an approach more akin to that of the Japanese, where the philosophy was one of “control with”, encouraging teamwork and group decision making.

19.4.4 Since 1988

As already noted, determining full cost is problematic, and despite the development of more sophisticated overhead allocation methods, in practice, simple methods, most notably, direct labor, tended to hold sway throughout the twentieth century. By 1991, however, direct labor contributed only about 10 percent of operating expenses for most industrial companies in the United States (Previs and Merino 1998). Accurate determination of costs, therefore, required the use of more sophisticated allocation methods than the volume-driven allocation bases then in use. Hence, Cooper and Kaplan (1988) developed ABC, a modern variant of earlier full-costing methods which utilizes multiple “cost drivers”, some volume-based, others not.

The concepts underlying ABC were not new, even in the United States, where “activity costing” had previously been suggested by Staubus (1971). The Dane, Madsen, had developed similar ideas in the 1960s, with his variability accounting approach, which was “built on the argument that arbitrary [overhead] allocations should be avoided and cost drivers identified so that accounting information could be made more relevant to the user situation” (Jönsson 1996: 445). Madsen’s views were taken on board by Swedish researchers and, alongside the development of computers, began to influence the design of accounting information systems in that country. While the focus of changes before the mid-1990s in Sweden was on improving “traditional” methods and techniques, rather than adopting new ones, some firms began to examine ABC and “new” accounting techniques (Ask et al. 1996). However, as in many other countries, including the United States itself, ABC had its opponents. Many have viewed it as a fad, rather than as a useful technique with decision-making relevance, and one whose implementation is both problematic and costly (Innes et al. 2000). Thus, perhaps not surprisingly, ABC has not enjoyed as widespread acceptance within companies as it has in certain academic circles (see Bhimani 1996).

19.4.4.1 The Utilization of Non-financial Measures

One element in the early debates between Kaplan and his supporters on the one hand, and his detractors on the other, was the relevance of accounting numbers, especially those produced by full-costing methods such as ABC. Implicit in the Johnson and Kaplan critique of traditional management accounting systems in the United States is the view that businessmen rely solely on accounting numbers to run their businesses. Thirty years previously, however, Simon et al. (1954) had shown that this was not the case, leading Tyson (1996) to argue that to blame traditional systems for irrelevance and inadequacy because they generated the wrong accounting numbers was to judge them inappropriately. Kaplan seems to have recognized some validity in such arguments, developing, in conjunction with Norton, the concept of the Balanced Scorecard, an approach to managerial control which incorporates four perspectives: financial, customer, internal business, and innovation and learning. In many respects the Balanced Scorecard approach mirrors that of the Tableau de Bord (TdB) in France, which emerged spontaneously in the 1960s and subsequently evolved from a “loosely defined tool into a formally structured instrument with well-defined purpose, content and form” (Lebas 1994: 471). While both approaches utilize the monitoring of physical and financial indicators to assess and anticipate performance, thereby facilitating both strategic and operational management, they differ in key respects:
the underlying strategic concepts, causal performance models, modes of deploying objectives and indicators within the organization, and the relationship between performance measures and rewards in terms of tightness (Bourguignon et al. 2004). The explanation for such differences lies in the differing ideological underpinnings of society and the resulting different ways of managing: in France, "social hierarchy, obedience, legitimacy and security are mainly questions of education and honour", whereas in the United States they are largely determined by management instruments (Bourguignon et al. 2004: 129). As a result of these differences, the Balanced Scorecard approach has not received a particularly favorable response in France.

In Japan, the attitude towards accounting numbers has traditionally been more flexible than in the West, there being less concern with data precision, and a greater willingness of managers to take a longer view and to base their decisions on "hunch, tradition, common sense, judgement and experience" (Yoshikawa et al. 1994: 4). Furthermore, Japanese cost accountants are responsible for calculating not only expected and actual costs, but also actual and expected 686, the working hours required for manufacturing one unit of a product or needed to carry out one job. Techniques which do not help to reduce the number or level of 686 do not retain, for long, their credibility for cost management purposes (Yoshikawa 2001).

19.5 Convergence?

Earlier, we noted that there has been a tendency towards convergence in respect of financial reporting. Commentators like Shields (1998) see a similar tendency in respect of management accounting, with recent developments in different parts of the world suggesting a significant degree of convergence, not towards a single "American" method of management accounting but rather a set of global management accounting practices, in which practices will become similar in all firms within a particular industry, but will vary across industries. For Shields it is increased levels of competition, the availability of similar operating technologies, cheap and fast communication and transportation, increasing global homogenization of management accounting education, the rise of global consulting firms, and the development of global corporations which are the key factors explaining such convergence. However, not all observers see things in the same way. Reviewing a survey of the experiences of European countries during the twentieth century, Macintosh (1998) was more struck by the similarities than the differences, while Birkett (1998) considers that the differences far outweigh any commonalities.

19.6 Conclusions

The discussion in this chapter has revealed that recent research by accounting and business historians has provided us with a clearer understanding of the importance of AICS in the development of business organizations over the last 250 years. While information always has been, and no doubt always will be, fundamental to the smooth running of businesses and capitalist economies, over time, the nature, type, and amount of information utilized, and the method of its collection and dissemination, have changed. National practices have been found to reflect social and cultural factors as well as differences in legal and political systems. Despite this, and due in part to the globalisation of business, some convergence has been discerned, especially in respect to financial reporting but also in cost/management accounting. Most recently, there have been clear indications amongst Western companies of a shift from financial methods of business control, which had grown in importance since the early decades of the twentieth century, towards the use of methods which incorporate physical measures and adopt a more strategic focus, in the manner of Japanese corporations since the Second World War. While some businessmen at times may have been susceptible to new academic fads or fashions, many today continue to utilise full, rather than variable, costing methods, just as did their predecessors at the beginning of the twentieth century.

There is still much, however, that we do not know about the nature and exact timing of the development of AICS in individual countries, or the factors and historical processes involved. Establishing the extent of any historical convergence in practices will require further archive-based research, both within countries and of a comparative nature. Comparative international accounting history, currently in its infancy (Carnegie and Napier 2002), will be vital to developing further our knowledge of the impact, on the dissemination of ideas and the diffusion of practices, of such factors as colonization, trading links, and the sharing of common languages and cultures. Further research will hopefully help us to better understand the links, if any, between advances in accounting theory and accounting practice. With accounting history becoming a respected research discipline for academics in many countries, with the possible exception of the United States, the omens are generally good, but for historians to be successful in these quests, it is imperative that archivists the world over are prepared to preserve bulky accounting records.

References


