

“The Enormous File”: The Evolution of the Modern Office in Early Twentieth- Century Canada

by GRAHAM S. LOWE*

As skyscrapers replace rows of small shops, so offices replace free markets. Each office within the skyscraper is a segment of the enormous file, a part of the symbol factory that produces the billion slips of paper that gear modern society into its daily shape. C. Wright Mills, *White Collar*, (New York, 1951), p. 189.

An electronic revolution of staggering magnitude is sweeping the office. The integrated electronic office is becoming a reality made possible through the merging of telecommunications and computer technologies. Filing cabinets, office memos, and written reports are being replaced by a network of computer terminals with a huge capacity for generating, storing, and processing data. Visions of a paperless office give us pause to reflect on the social and economic forces which gave rise to the proliferation of paper records. The integrated electronic office will take some years to evolve; only a dozen or so major Canadian organizations currently are planning to implement the new technology.¹ The endless stream of paper now vital to the office is likely to remain the lifeblood of administration for the foreseeable future. How and why did paper work become such a fundamental component of modern capitalism? To use C. Wright Mills' apt metaphor, what were the origins of the “enormous file”?

The office is the central nervous system of modern organizations, generating, transmitting, and storing vast quantities of information. According to Max Weber, the bureaucratic form of work organization is synonymous with capitalist development: the two are interdependent.² While many students of modern work organizations are critical of Weber's idealized picture of bureaucracy as the ultimate in efficient, rational business activity, few would deny its reliance on clerical procedures.³ As Weber observed, “the management of the

* An earlier version of this paper was presented at the Annual Meeting of the Association of Canadian Archivists, Toronto, 23 May 1984. Helpful comments were provided by Tom Nesmith and Chris Armstrong. Financial support for much of the research reported in this paper was provided by an SSHRC doctoral fellowship. I also wish to acknowledge the typing services of Shirley Stawnychy.

1 *The Globe and Mail*, 24 October 1983, p. R1.

2 See Max Weber, “Bureaucracy,” in H. Gerth and C.W. Mills, eds., *From Max Weber* (New York, 1946).

3 For a critical discussion of Weber's neglect of the inefficiencies of bureaucracy, see Martin Albrow, *Bureaucracy* (London, 1970) and R.K. Merton, “Bureaucratic Structure and Personality,” in R.K. Merton et al., eds., *Reader in Bureaucracy* (New York, 1952).

© All rights reserved: *Archivaria* 19 (Winter 1984-85)

modern office is based upon written documents (the files). . . There is, therefore, a staff of subaltern officials and scribes of all sorts. . . .”⁴ Weber, and a host of other organizational scholars, neglect to tell us why “the files” are required in the first place. What social and economic changes associated with the rise of capitalism demanded increased information? How did this proliferation of records keeping result in new office structures and a rationalization of clerical work? The explosion of written records was the product of early twentieth-century economic, organizational, and occupational changes which together constitute an administrative revolution. This paper traces the broad outlines of the administrative revolution. The goal is a deeper understanding of the evolution of the written record which, by virtue of being the key to the rise of today’s office, also provides insights into the shape of the office of the future.

The transition from the traditional one-room office of the nineteenth century to the multi-departmental bureaucracy of the twentieth century was gradual. The small, informal counting house of the nineteenth century was staffed by a craftsman-like bookkeeper, perhaps assisted by an office boy and a junior clerk. The old office was also characterized by informal social relations, unsystematic administrative procedures, and a minimal amount of records. The bookkeeper was a generalist who learned his craft by apprenticeship. He retained much of his employer’s “office system” in his head. Overall, a “rule-of-thumb” approach to management matters prevailed. The smallness and modest scale of activities characteristic of firms in late-nineteenth-century entrepreneurial capitalism thus required little in the way of sophisticated organizational structure, records keeping, and administrative planning.

In sharp contrast to the old-style office, the hub of administration in twentieth century corporations and government is a large, centralized bureaucracy. The advantages of bureaucracy, according to Max Weber, include “precision, speed, unambiguity, knowledge of the files, continuity, discretion, unity, strict subordination, reduction of friction and of material and personal costs.”⁵ In other words, the formalized procedures, hierarchical chain of command, and specialized division of labour of bureaucracies were supposed to inject efficiency into organizational life. Administrative activities increasingly focused on the internal operations of organizations, as opposed to only external market factors, as firms increased in size and complexity. Office clerks processed a rising tide of data on production, costs, personnel, and internal communications. A precise definition of this expanded role of the office is provided by one of the new breed of “scientific” office managers who gained prominence around the First World War. “The office,” wrote William H. Leffingwell, “is that part of the enterprise devoted to the direction and coordination of its various activities. It is characterized by the gathering, classification, and preservation of all kinds of records; the analysis and utilization of these data in planning, executing, and

4 Weber, “Bureaucracy,” p. 209.

5 Weber, “Bureaucracy,” p. 214.

determining the results of operation; the preparation, issuing, and preservation of instructions and orders; and the composition, copying, and filing of written messages."⁶

The modern office originated in the largest organizations, both public and private, and its basic framework was in place by the onset of the depression. Certainly many small and medium-sized firms continued to operate in a traditional fashion. But diffusion of more systematic administrative techniques proceeded steadily. Even in organizations with old-style bookkeepers, such employees would no longer be able to maintain an overview of the entire operation. As one contemporary observer put it, by the early twentieth century "the bookkeeper in a large firm [was] no longer in a position to know whether 'the books are in good shape'."⁷ In fact, many male bookkeepers and chief clerks were elevated into the newly created ranks of office management. At the same time, the proliferation of a myriad of routine administrative tasks associated with the rise of modern industry spawned numerous routine clerical positions at the bottom of the organizational hierarchy.

The explosion of clerical occupations signalled the rise of an entirely new stratum of office employee occupied by the female clerk who performed highly specialized, routine, and often mechanized tasks. This feminization of clerical work is one of the hallmarks of the administrative revolution. As women flooded into the office after 1900, they did not displace male clerks. Instead, they were recruited into a qualitatively different kind of routine office job. C. Wright Mills' epitaph for the nineteenth-century male bookkeeper captures this shift in the sex composition of clerical staffs: "The bookkeeper has been grievously affected by the last century of office change: his old central position is usurped by the office manager, and even the most experienced bookkeeper with pen and ink cannot compete with a high-school girl trained in three or four months to use a machine."⁸

The influx of women into office work can be traced to the opening years of the twentieth century. Males dominated in the late-nineteenth-century office. In 1891, there were 33,017 clerks in Canada, only 4,710 or 14.3 per cent of whom were women.⁹ Few women were gainfully employed during this era. In 1891, 11.4 per cent of the female population over the age of ten were employed for wages, comprising only 12.6 per cent of the entire labour force.¹⁰ Powerful ideological barriers prevented women from leaving their traditional roles in the home. Slowly, the gender stereotypes which restricted women to a limited range of jobs — mainly teaching, domestic work, and dressmaking — were relaxed to accommodate the requirements of changing labour market demands for cheap but reliable office help.¹¹ Between 1891 and 1921, the decade growth rate for

6 William H. Leffingwell, *Scientific Office Management* (Chicago, 1917), p. 3.

7 Carl Dreyfuss, *Occupation and Ideology of the Salaried Employee*, vol. 1, (trans. E. Abramovitch) (New York, 1938), p. 113. For an overview of the transition from the old to the new office see David Lockwood, *The Blackcoated Worker* (London, 1958).

8 C. Wright Mills, *White Collar* (New York, 1951), pp. 63-64.

9 Graham S. Lowe, "Women, Work and the Office: the Feminization of Clerical Occupations in Canada, 1901-1931," *Canadian Journal of Sociology* 5 (1980), pp. 364-65.

10 Lowe, "Women, Work," p. 363.

11 Patricia Connelly, *Last Hired, First Fired* (Toronto, 1978), p. 88.

female clerks was over 166 per cent, much in excess of the rise in total female labour force participation rates. The 1910s were crucial to the maturation of the modern office. Even though the nation's labour force increased by only 23.8 per cent, clerical ranks swelled at a rate of 109.3 per cent, largely because of the hiring of women.¹² The First World War helped open the doors of offices to women, as many employers were compelled to recruit them due to shortages of male clerks.

Clerical growth stabilized during the 1920s. Office managers set about rationalizing the unwieldy bureaucracies born in the previous two decades of economic boom. By 1931, clerical workers comprised 6.7 per cent of the entire labour force, a considerable gain from 2 per cent in 1891.¹³ The feminization process was well underway, considering that women filled 45.1 per cent of all clerical positions. Many office jobs such as stenographer, typist, receptionist, office-machine operator remained "female" jobs for decades to come.¹⁴ In fact, clerical work was rapidly becoming the country's largest female job ghetto.¹⁵ As Rosabeth Moss Kanter astutely observes, the prototype of male domination and female subordination in the contemporary workplace is the male manager and the female secretary.¹⁶

The major sources of new clerical jobs were in the manufacturing and service sectors. This industrial pattern of employment mirrors the growing importance of these economic activities to the rise of corporate capitalism after 1900. By more carefully examining where the greatest share of clerical jobs were being created, we can bring into sharper focus the contours of the administrative revolution.¹⁷ Between 1911 and 1931, there were close to 150,000 new clerical jobs created in the entire economy. Fully 34.5 per cent of these were accounted for by manufacturing and 21 per cent by finance. By 1931, manufacturing, trade, and finance each employed over 20 per cent of all female clerks. Between 1911 and 1931, 85 per cent of all new clerical jobs were created in four sectors of the economy: manufacturing, transportation and communication, trade, and finance.

The astounding growth of clerical occupations after 1900 can be explained partly by the proliferation of traditional office tasks. Processing insurance policies, accounting and bookkeeping activities in banks, recording production figures and sales in manufacturing — the scope and volume of these clerical activities were greatly amplified by economic development. Even more fundamental, however, was the changing function of clerical work. As the office became the nerve centre of administration, managers could exercise tighter control over the internal and external operations of the organization. Coordination and integration of employees performing specialized jobs within diverse

12 Graham S. Lowe, "The Administrative Revolution in the Canadian Office: An Overview," in K.L.P. Lundy and B. Warne, eds., *Work in the Canadian Context* (Toronto, 1981), p. 157.

13 Lowe, "Administrative Revolution," p. 156.

14 See Lowe, "Women, Work," for details of the feminization of clerical work.

15 Thus by 1981 there were over 1.5 million female clerks in Canada performing 78.2 per cent of all clerical jobs. Now over 34 per cent of all working women do some kind of clerical work. Labour Canada, *Women in the Labour Force, Part I: Participation* (Ottawa, 1983), p. 33.

16 Rosabeth Moss Kanter, *Men and Women of the Corporation* (New York, 1977), p. 18.

17 The following data are summarized from Lowe, "Administrative Revolution," p. 157-58.

departments taxed traditional management practices. Alfred Chandler's studies of the rise of American corporations are instructive in this connection. He concludes that "growth without structural adjustment can lead only to economic inefficiency."¹⁸ Thus, modern enterprises arose in the second half of the nineteenth century when the volume of economic activity necessitated administrative coordination. The capricious forces of the marketplace were replaced by managerial systems and bureaucratic structures.¹⁹

Control over organizational growth, markets, all levels of decision making, and the work force were the immediate concerns of management. Driven by a quest for greater efficiency measured in terms of lower costs, higher productivity, and improved profit margins, managers became aware of the central role of administrative systems in their business strategies. Management exercised control through the office. The new "science" of management was founded on the principles of efficiency and rationality which became entrenched in systems of administrative control. Most of the programmes of efficiency conscious managers, from scientific management to cost accounting, were initially devised for the factory and shop. But after the First World War these schemes were applied with equal vigour to the office. Offices were thus subjected to increasing rationalization, bureaucratization, and mechanization. As clerical work became more standardized, regulated, and fragmented, working conditions became like those in a factory. This trend prompted the following observation from a *Monetary Times* editorialist in 1920: "For many years mechanical production has been carried on as a process in which the individual workman plays an insignificant part; he is part of the machine which is essential because inventive genius has not been able to entirely eliminate the human elements . . . With the growth of large corporations during the past years the same tendency in the clerical end of production is more and more making itself felt. Here, too, a great machine has been created."²⁰

This section of the paper will examine more closely the economic forces underlying the administrative revolution. Most economic historians agree that the opening of Canada's prairie agricultural frontier in the first decade of the new century created opportunities for rapid development in manufacturing and services. The net value of industrial production rose by 250 per cent as more raw materials were processed domestically. Capital investment in manufacturing almost tripled and industry became more concentrated in central Canada, especially southwestern Ontario. But the demands of the First World War led to a boom in "new" industries founded on twentieth-century technologies such as pulp and paper, automobiles, non-ferrous metals, chemicals, and electrical equipment. In many of these sectors American firms dominated. The number

18 Alfred D. Chandler, Jr., *Strategy and Structure* (New York, 1966), p. 19.

19 See Alfred D. Chandler, Jr., *The Visible Hand: The Managerial Revolution in American Business* (Cambridge, Mass., 1977) for a superb analysis of how the "visible hand" of management came to replace Adam Smith's proverbial "invisible hand" of the marketplace in nineteenth-century American business.

20 *Monetary Times* (hereafter *MT*), 1 October 1920, p. 10.

of U.S. branch plants increased from 100 in 1900 to 1,350 by the end of 1934.²¹ Many of the giants of the American business world had established Canadian operations by the 1920s, importing not only products but also the most advanced forms of corporate organization and management systems. Despite this flurry of manufacturing activity, Canada has had a relatively underdeveloped manufacturing base. This reflects the structural difficulties of making a successful transition from colonial resource dependency to an independent industrial economy. One consequence of this structural problem in the Canadian economy is that early in the century the service sector assumed a much greater role than in most other industrial nations.²² During the wheat boom, transportation, financial, commercial, and government services were more important to expansion than manufacturing.

These economic trends brought a fundamental restructuring of Canadian industry through the processes of capital concentration and centralization. The monopoly, the trust, and the combination helped eliminate competition and open up new markets. Furthermore, through economies of scale these huge business organizations could better deploy technical, managerial, and raw material resources. Two waves of corporate mergers were largely responsible for the maturation of Canada's industrial framework. One wave came in the prewar years of 1909-13, while the other occurred in the late 1920s. The process led to the dominance of a handful of firms in key sectors of the economy.²³ For instance, consolidation in the banking industry meant a reduction in the number of banks from fifty-one in 1875 to eleven by 1925.²⁴ The joint-stock form of corporate organization surfaced in the 1890s, facilitating the concentration of industries into larger operating units by amassing the capital of private shareholders. In 1890, just over 20 per cent of the 76,000 manufacturers in Canada had more than seventy-five employees. Yet between 1900 and 1910, the number of manufacturing firms declined despite the fact that capital investment per firm more than doubled.²⁵ Consolidation of two or more previously independent enterprises was the major vehicle for this industrial restructuring. But with bigness came the vexing problems of how to integrate, coordinate, and administer. We consequently discover Canadian managers becoming increasingly professionalized as they struggled to instill efficiency in what otherwise

21. O.J. McDiarmid, *Commercial Policy in the Canadian Economy* (Cambridge, Mass., 1946), p. 243; Gideon Rosenbluth, *Concentration in Canadian Manufacturing Industries*, National Bureau of Economic Research: General Series, no. 61 (Princeton, N.J., 1957), p. 9; O.J. Firestone, "Development of Canada's Economy, 1850-1900," in *Trends in the American Economy in the Nineteenth Century*, Studies in Income and Wealth no. 24 (Princeton, N.J., 1960), p. 156; Herbert Marshall et al., *Canadian-American Industry*, (Carleton Library edition: Toronto, 1976), p. 18.
22. David A. Worton, "The Service Industries in Canada," in V.R. Fuchs, ed., *Production and Productivity in the Service Industries* (New York, 1969), p. 238. According to Worton, despite its relatively weaker manufacturing base, Canada joined the U.S. in the 1960s as one of the few nations to have the majority of its labour force engaged in service industries.
23. J.C. Weldon, "Consolidation in Canadian Industry," in L.A. Skeoch ed., *Restrictive Trade Practice in Canada* (Toronto, 1966), p. 233.
24. Graham S. Lowe, "The Administrative Revolution: The Growth of Clerical Occupations and the Development of the Modern Office in Canada, 1911 to 1931," (Ph.D. thesis, University of Toronto, 1979), p. 121.
25. Firestone, "Canada's Economy," p. 230; R.T. Naylor, *The History of Canadian Business, 1867-1914*, vol. II (Toronto, 1975), pp. 193-94.

would have been cumbersome bureaucracy. It is to this quest for organizational efficiency, and its implications for administration, which we now turn.

Studies of the labour process by historians and sociologists over the past decade have carefully documented the dynamics of twentieth-century workplace reorganization at the hands of management.²⁶ Harry Braverman's *Labour and Monopoly Capital* has been especially instrumental in reorienting the study of work to focus on the way task rationalization has deskilled and demeaned jobs. Braverman asserts that "control over work through control over decisions that are made in the course of work" is the guiding principle of all modern management. Following the lead of their American counterparts, Canadian managers began to realize the urgency of rationalizing the productive process to reduce costs and boost output. This impetus for more systematic approaches to management began in factories and shops at the end of the nineteenth century. Braverman describes how the factory office is essentially a paper replica of production, whereby management exercises control by requiring "that every activity in production have its several parallel activities in the management centre: each must be devised, precalculated, tested, laid out, assigned and ordered, checked and inspected, and recorded throughout its duration and upon completion."²⁷ Managers also strove to eliminate uncertainty and tighten their grasp on daily operations in service industries. The administration of giant banking, insurance, retailing, transportation, and government bureaucracies posed managerial problems similar to those faced in manufacturing.

The convergence of two broad industrial trends in the last quarter of the nineteenth century gave rise to the modern managerial function in American industry. One result of factory expansion was the movement of trained engineers into management positions. Administration thus became a specialized activity, and from then on managers waged a running battle against sources of inefficiency in organizational structure and worker behaviour. Factory engineers attempted to replace the traditional *ad hoc* approach to management with formal, centralized controls through which they could exert direct influence over the factory and its employees. Recognizing that lack of organizational coordination created an "administrative vacuum," they set about to "put 'method' into shop management" by introducing administrative systems.²⁸ These so-called "systematic managers" advocated three types of innovation: cost accounting systems to achieve vertical integration; production and inventory control systems to bring about horizontal integration; and wage incentives and bonus

26 The journal *Labour/Le Travail* is the best Canadian source for the "new labour history." See Gregory S. Kealey, "Labour and Working-Class History in Canada: Prospects in the 1980's," *Labour/Le Travailleur* 7 (1981), pp. 67-94 for an overview of the field. For a review of recent sociological studies of the labour process see Stephen Hill, *Competition and Control at Work* (London, 1981) and C.R. Littler and G. Salaman, "Bravermania and Beyond: Recent Theories of the Labour Process," *Sociology* 16 (1982), pp. 251-69.

27 Harry Braverman, *Labour and Monopoly Capital: The Degradation of Work in the Twentieth Century* (New York, 1974), pp. 107, 125.

28 Daniel Nelson, *Managers and Workers: The Origins of the New Factory System in the United States, 1880-1920* (Madison, 1975), pp. 48-49.

plans to boost labour productivity and cut unit costs.²⁹ The manager, equipped with a rigorous administrative system, became a prominent feature of the modern factory. According to an editorial in an engineering journal, by the turn of the century there were signs in both North America and Europe of “an awakening in everything related to workshop administration, including organization, cost-keeping, [and] provision for depreciation of plant . . . These subjects are appearing in prominent journals on both sides of the Atlantic. It is beginning to be appreciated generally that success in engineering work, commercially considered, depends very greatly upon the manner in which problems of shop administration are treated.”³⁰

The American engineer, Fredrick W. Taylor, extended and promulgated the innovations of the systematic factory managers. Taylor’s name became synonymous with scientific management, and by his death in 1915 his doctrines had gained wide popularity in management circles in both Canada and the United States. Taylor’s approach to management rested on three axioms: a) the dissociation of the labour process from the skills of the worker; b) the separation of the conception of a task from its execution; and c) the use of management’s subsequent monopoly over knowledge to control each step in the productive process.³¹ Taylorism fragmented and deskilled tasks, reducing workers to minor cogs in the machinery of production. Taylor’s full system was not widely implemented, however, and it is best viewed as one component of what Bryan Palmer calls the managerial “thrust for efficiency.” According to Palmer, this encompassed “an eclectic collection of managerial reforms and innovations, the underlying feature of which was the attempt to implement a thorough-going rationalization of the productive process.”³²

The quest for efficiency also found its way into the administrative apparatus of the economy. By the First World War the scale of office operations and the rising tide of paper work posed a serious cost burden for most large organizations. William H. Leffingwell wrote in 1917 that “many businessmen, after analyzing the remarkable results secured by applying Fredrick W. Taylor’s system of scientific management in factories, have asked whether or not similar

29 Joseph A. Littler, “Systematic Management: Design for Organizational Recoupling in American Manufacturing Firms,” *Business History Review* 37 (Winter 1963), pp. 376-77.

30 Leland H. Jenks, “Early Phases of the Management Movement,” *Administrative Science Quarterly* 5 (December 1960), p. 428.

31 See Daniel Nelson, *Fredrick W. Taylor and the Rise of Scientific Management* (Madison, 1980). Taylor first presented his system in a paper read before the American Society of Mechanical Engineers (ASME) in 1895. It was entitled “A Piece-Rate System, Being a Step Toward Partial Solution of the Labor Problem,” *ASME Transactions* 16 (1895), pp. 860-61. It discussed wage incentives, a topic of some concern to U.S. businessmen who faced rising costs and increasingly competitive international markets. Cost accounting had already provided a partial remedy. But Taylor’s innovation was to advocate objectively determined times for the performance of all tasks in production. If workers completed a task within the specified time, they received a good piece rate. If they failed to achieve this, their pay was so low that they eventually would be forced to quit. This “carrot-and-stick” approach captured the attention of manufacturers because of its dual effect: it eliminated lazy workers, thus alleviating the “labour problem,” and it encouraged worker-management cooperation in the interests of higher production; see also Braverman, *Labour and Monopoly Capital*, pp. 113-14, 119.

32 Bryan Palmer, “Class, Conception and Conflict: The Thrust for Efficiency, Managerial Views of Labour and the Working Class Rebellion,” *Review of Radical Political Economics* 7 (Summer 1975), p. 32.

betterments could not be obtained in offices with the system. Their questions can now be answered, for the main principles of the Taylor system have actually been adapted and applied in office work."³³

Canada's close economic links with the U.S. fostered interest in American management techniques. As Paul Craven argues, "the reliance on imported technique characteristic of the staples economy extended to techniques of business organization as well. Canada's managerial revolution, in a word, was imported from the United States." Craven explains that there were three conduits through which Canadian managers acquired the latest in American administrative practices: direct foreign investment when management policies were dictated by American head offices; the hiring of American managers or "efficiency experts;" and trade organizations and journals.³⁴ After 1900, influential business publications such as the *Monetary Times* and *Industrial Canada* helped articulate a coherent view of the goals of management and the most effective means for achieving them.

As early as 1907, discussions in *Industrial Canada* of innovative factory organization stressed the importance of a smoothly functioning office.³⁵ The creation of specialized staff departments to process, record, and store mountains of detailed information necessary to monitor production was advocated by most practitioners of the new science of management. To quote Daniel Nelson, "factory clerks were an essential accoutrement of scientific management."³⁶ Major firms such as the Lumen Bearing Company in Toronto and the Canadian Pacific Railway attracted considerable attention with their implementation of time study, piece rates, standardized job routines, work reorganization, and other features of Taylorism.³⁷ H.L. Gantt, a Taylor associate hired as an efficiency consultant by the CPR in 1909, proclaimed to Canadian businessmen that "scientific management is the new gospel of industrial progress." He advised them to prune unnecessary costs instead of raising prices. When Gantt explained that cost-cutting required the elimination of chance from business decision making through the use of science, he undoubtedly struck a responsive chord with his audience: "To eliminate this blind by-play with chance and substitute methods based on technical inquiry and proved results, is the task of scientific management. Every element in a business should come under this searching inquiry, from shop to office. And whenever it strikes, it means the elimination of waste time, waste energy, waste materials."³⁸

Gantt's comments alert us to the centrality of cost accounting to virtually all forms of the new management. The reduction of all component costs in a business was a principal goal of management. The introduction of employee time recorders, or punch-clocks, into the Canadian workplace in 1902 was a

33 Leffingwell, *Scientific Office Management*, p. 5.

34 Paul Craven, "An Impartial Umpire": *Industrial Relations and the Canadian State, 1900-1911* (Toronto, 1980), pp. 94-96.

35 *Industrial Canada* (hereafter *IC*), (February 1907), p. 588.

36 Nelson, *Managers and Workers*, p. 51.

37 *IC*, (May 1911), p. 1076; *Railway and Marine World*, (January 1912), pp. 1-3.

38 H.L. Gantt, "The Straight Line to Profit," *IC*, (March 1911), pp. 837-40.

major step towards controlling labour costs and worker productivity.³⁹ By 1915, the International Time Recording Company of Canada, the major distributor of time-clocks and a predecessor of IBM, listed fifty major Canadian organizations among its customers. The extension of cost controls to clerical work is apparent from a post First World War sales pitch to office managers from IBM: "Office help is expensive and one of the largest overhead items. [It] should be measured and checked as carefully as light, heat, power, rent, etc."⁴⁰

The application of cost accounting, more than anything else, honed a sharp cutting edge on the efficiency drives in both factory and office. And, of course, cost accounting formed the basis of elaborate administrative systems which generated additional business data. An early textbook on the topic ventured that "organization, management and cost accounting are so intimately related that it is almost impossible to consider them separately." Basically, cost accounting methods record and analyze all factor costs of a business so that management knows what each part of the production process contributes to profits. The ultimate objective is "to provide data for the control of the business."⁴¹ The institutionalization of cost accounting as a specialized branch of management attests to its overall importance. In 1920, a Cost Accountants' Association of Canada was organized in Toronto to further the "new science of cost accounting." Observing the trends in management practices, the *Monetary Times* asserted in 1919 that "soon the concern will be rare which does not use a cost system of some kind or other."⁴²

In summary, cost accounting was the backbone of many of the managerial reforms which were introduced in industrial enterprises after 1900. It paved the way for further rationalization of production by furnishing a profile of the relative efficiency of the various elements of a firm. Armed with detailed cost information, management could accurately plan organizational changes, devise personnel policies to increase worker productivity, and more effectively guide innovation and expansion. It was only natural that with the spread of modern management techniques, expanding clerical staffs and soaring office overhead would fall under the critical scrutiny of managers. Businessmen first accepted the growth of administrative layers as an unavoidable side-effect of more progressive management systems. A 1905 gathering of Hamilton manufacturers was cautioned that the elimination of waste and inefficiency through cost accounting would result in additional clerical and office expenses: "Of course it must be understood that to have an accurate Cost System will increase the expense of the office or accounting, though not to a great extent, but with a proper system the extra clerical expense will be saved again and again in the factory."⁴³

Yet as administrative costs soared across the manufacturing and service sectors, they threatened to undermine the role of the office as an administra-

39 Craven, "Impartial Umpire," p. 86; *IC*, (1 May 1902), p. 337.

40 *IC*, (July 1915), pp. 376-77; *I.B.M. Canadian Sales Record*, (10 February 1921).

41 J.P. Jordan and G.L. Harris, *Cost Accounting: Principles and Practices* 2nd ed (New York, 1925), pp. 1, 19.

42 *MT*, 24 September 1920, p. 10; *MT*, 26 September 1919, p. 30.

43 *IC*, (July 1905), p. 843.

tive control centre. Modern management required recording, analysis, storage, and retrieval of a vast array of information on costs, worker productivity, market conditions, customer accounts, and so on. The process of bureaucratization exacerbated the problems of administrative inefficiency. Large, multi-departmental offices emerged to cope with the paper work generated in the wake of industrialization. The fragmentation of tasks and specialized division of labour made it difficult to coordinate, integrate, and regulate administrative procedures. This set of problems is at the heart of office rationalization. Whether through increased mechanization of clerical tasks or the complete restructuring of the office labour process, the trend toward a streamlined and rationalized office was well under way by the 1920s. This marked the final phase in the evolution of the modern office.

Thus far, we have documented how the ascendancy of corporate capitalism precipitated more bureaucratized administrative structures. At this juncture it is useful to focus on the process of office rationalization associated with the explosion in clerical personnel. The modern office owes its basic outline to the scissor-like action of two forces: mechanization and rationalization. Deluged by mounting volumes of paper and large numbers of clerks, office managers sought ways of redesigning administration.

Early innovations in office procedures usually involved the adoption of modern accounting and records keeping. A typical example is found in Standard Oil's New Brunswick subsidiary, the Eastern Oil Company. In the 1890s, Eastern Oil received from its parent a new bookkeeping system and modern accounting and ordering procedures. A bookkeeper and a clerk were added to the staff, and the regular scrutiny of Standard Oil auditors provided additional control.⁴⁴ Documentation of similar changes is difficult to obtain. We do nonetheless have evidence showing that at least one major organization developed a very sophisticated administrative system. Around the turn of the century, Canadian banks were expanding their horizons to national and international dimensions. Facing management problems similar to those found in large factories, the Bank of Nova Scotia devised an elaborate method of controlling clerical productivity. Called the Unit Work System, it was introduced in 1901 as the basis of the bank's cost accounting system and its schedule for service charges.⁴⁵ Designed to boost operating efficiency, the Unit Work System required branch managers to estimate the work performed by each of their staff members. The average cost per one thousand of all important functions was computed from these data and reduced to units of labour power. By comparing the number of work units handled by a particular branch with the productivity ratings of its staff, head office management could determine manpower requirements, efficiency and productivity, salary increases, and promotions throughout

44 Imperial Oil Library, *The History of Imperial Oil Limited*, by J.S. Ewing, unpublished mss., vol. 1, chapter IV, pp. 15-16.

45 Bank of Nova Scotia Archives (hereafter BNSA), "The Bank of Nova Scotia, 1832-1932, One Hundredth Anniversary," p. 83.

the branch system. The bank, armed with these scientific data, admonished its managers to "give close study to the systematic management of routine."⁴⁶

Some large bureaucracies employed American efficiency experts to rationalize their offices. Just prior to the First World War, for example, the Land and Collection Branch of the Canadian Pacific Railway's Department of Natural Resources in Calgary was handling a larger volume of business than any loan company in the Dominion. The railway conducted a survey of office methods used in Canadian and American loan companies. The study led to the hiring of "a thoroughly competent efficiency expert" from the U.S. to reorganize the branch and simplify its methods.⁴⁷

Public bureaucracies experienced the usual range of organizational problems. The federal civil service had a long history of inefficiency, much of it attributable to rampant patronage. The problems reached crisis proportions with the bloating of civil service ranks during the First World War. "Efficiency in government" became the rallying cry of the Borden government's attack on the evils of patronage. The main reform was an elaborate civil service classification and salary scheme developed by Arthur Young and Company, an American management consulting firm. The Civil Service Commission oversaw this massive reorganization, probably the most extensive in any Canadian organization before the 1930s. Enshrined in the 1918-19 *Civil Service Act* were the most advanced ideas of U.S. management.⁴⁸

E.O. Griffenhagen, Arthur Young's expert on civil service organization, advocated "a business-like approach to government." He transformed the entire civil service structure, causing considerable disruption and discontent.⁴⁹ Griffenhagen applied the full weight of Taylorism to the Department of Public Printing and Stationery, one of the least productive parts of the bureaucracy. Records and procedures were standardized, staff requirements formalized, plant and office layouts streamlined, new equipment introduced, and 400 "unnecessary" employees eliminated on the basis of their relatively low efficiency ratings.⁵⁰ The Industrial Engineering Department of Arthur Young was separately incorporated in Canada in 1920 as Griffenhagen and Associates. Because of publicity about the apparent success of its civil service reorganization, the consultants were hired by the City of Montreal, the Bank of Montreal, the Quebec Government, Massey-Harris, and Canadian Cereal and Flour Mills Ltd.⁵¹

The second vehicle for office rationalization was the introduction of technology. Machinery holds out several advantages for the manager: it increases the pace of production; provides a much higher degree of regulation over the

46 BNSA, "Rules and Regulations of the Bank of Nova Scotia, Revision of 1917," p. 37. It was assumed that each branch and its workers could attain "a uniform standard of working capacity."

47 Canadian Pacific Railway Archives, Shaughnessy Letterbook 105, p. 653, President to Mr. Dennis, 30 January 1914.

48 J.E. Hodgetts et al., *The Biography of an Institution* (Montreal, 1972), pp. 45-46, 59-65. Civil service reform was one of the key issues in the 1917 federal election.

49 *Ibid.*, p. 76.

50 Canada, Civil Service Commission, *Annual Report*, Sessional Paper No. 32, 1919, p. 17.

51 Hodgetts, *Biography*, p. 87.

labour process; and by advancing the division of labour it allows workers to be hired at lower wages. Technologies ranging from the typewriter and adding machine to the pinnacle of early office mechanization, Hollerith punch-card equipment, generated more information for managerial decisions while intensifying clerical work. Typewriters and adding machines precipitated little change in the actual organization of clerical routines; they merely assisted in the execution of traditional tasks. Yet when machines were integrated into production systems, such as a typing pool or a specialized accounting division staffed by adding machine operators, the logic of efficiency inherent in machinery began to triumph over the human element. And with the introduction of punch card equipment during the 1920s, the stage was set for post-Second World War office automation. Hollerith machines represented a quantum leap in office mechanization. The capacity for information management grew exponentially, and working conditions in Hollerith departments bore a striking resemblance to those in a factory.

The typewriter quickly became a standard feature in offices after 1900. These machines increased the ability for correspondence and records keeping. Moreover, they facilitated standardized methods for performing these functions. But only with the creation of central typing pools before the First World War was the typewriter's full potential for rationalizing clerical work realized. A typing pool resembled an assembly line for correspondence, reports, and records. The productivity of the typists was much more easily monitored in this centralized setting. Taylor's vision of efficiency was thus more attainable: "standards will be set, tasks will be assigned and controlled with the same precision and definiteness as in the scientifically managed factory."⁵² Not surprisingly, scientific management experts devised ways of reducing the level of control typists exercised over their work. W.H. Leffingwell, for instance, attempted to set production quotas and efficiency ratings for typists by measuring square inches of type.⁵³ Major Canadian businesses, such as Sun Life, had introduced the typing pool before 1914. By the 1930s, Sun Life employed eighty-seven female typists in its central stenographic department.⁵⁴ And when the Canadian Pacific Railway reorganized the twenty typists and stenographers from its auditing departments into a pool, it claimed to have successfully achieved greater flexibility and reduced waiting time as well as a cut in staff.⁵⁵

Evidence from Canadian offices in the 1920s would certainly support C. Wright Mills' contention that the "office machine age" is born when technology and the social organization of production are tightly fused with the goal of maximum efficiency.⁵⁶ Typing pools meet this criteria, but it was the Hollerith machine which exemplified the highest level of office technology prior to the introduction of computers in the 1950s and 1960s. This is not to deny that adding and calculating machines facilitated extremely rationalized administration. Indeed, when the Consumer's Gas Company of Toronto introduced

52 Kenneth Falconer, "Practical Value of Cost Accounting," *IC*, (August 1903), p. 26.

53 W.H. Leffingwell, "The Office Through a Microscope," *National Efficiency Quarterly* 1 (1918), p. 91.

54 Sun Life Archives, "Personnel Files, Number 2."

55 *Canadian Pacific Staff Bulletin*, (1 December 1935), p. 5.

56 Mills, *White Collar*, p. 195.

accounting machines to speed up customer billings, it did so within the context of carefully planned organizational reforms.⁵⁷ Sun Life and Bell Telephone also fully mechanized their accounting functions, striving to enhance efficiency gains from the machines by restructuring their accounting departments.⁵⁸ These machines fuelled the growth of statistical information by generating masses of numbers which previously had not been available to management. In this sense, mechanization contributed to the growth of clerical workers simply by boosting the office's capacity to produce information.

There were few large offices in the twenties which did not have mechanized accounting and records-keeping systems staffed by rows of female clerks. However, one would have had to visit the Hollerith units of these organizations to sense the full power of mechanization. What was revolutionary about the Hollerith was its use of a standardized punch card for recording data. Accessory machines were used to sort, read, tabulate, and print the data on these cards. Parallels with factory work are striking, although we should note that these office machine operators were relatively few in number. Arranged in a series, Hollerith machines functioned in a semi-automatic fashion. The Canadian Tabulating Company (a forerunner of IBM) began marketing the machines on licence from the U.S. in 1910, and by 1916 it had forty-one customers across Canada. Hollerith sales reached the \$1 million mark in Canada by 1918. By the mid-1930s, 105 large corporations and government departments relied on the Hollerith system.⁵⁹ Many of these organizations had central Hollerith departments. The working conditions of the operators, needless to say, had a highly developed routine, given their fragmented, machine-paced, repetitive tasks. By equipping managers with a wide range of statistical information, the machines allowed a heightened regulation of employees' activities which reverberated to every corner of the organization.

In summary, we have characterized the transformation of office structures and clerical work as an administrative revolution. Control is perhaps the dominant theme in our discussion of how the framework of the modern office was forged. The crux of the argument presented is that control, exercised mainly by management, was a decisive force in both the rapid growth of clerical occupations and the increasing rationalization of the office. With the rise of large corporate bureaucracies, operating authority was delegated to professional managers. These managers became ever more aware of how problems in organizational design, the regulation of employee behaviour, and other non-technical factors were detracting from efficiency and, ultimately, profits. Managers typically seized upon administrative solutions to organizational malfunctions and recalcitrant employees. Motivated by the need to create closely monitored, carefully coordinated, and tightly integrated operations in order to survive in a booming industrial economy, managers located the new administrative control functions in the office. Parallel trends were also evident in service industries.

57 *Intercolonial Gas Journal of Canada*, (1 November 1912), pp. 416-17.

58 See Lowe, "Mechanization, Feminization."

59 *Ibid.*

Large office bureaucracies sprung up over night to process the mountain of paper necessitated by the important new role such industries played in the economic transformation of early twentieth-century Canada.

Clerical records keeping, correspondence, filing, and information processing and analysis became indispensable for conducting business. Clerks thus emerged as the drones of modern administration, the group which presided over the proliferation of the textual record. The essential function of the office was the provision of information for managerial decision making. As the office expanded its administrative role, it fell prey to a range of inefficiencies. Larger staffs and more complex procedures made it exceedingly difficult to achieve Max Weber's ideal of a well-oiled, finely tuned bureaucracy. Clerical costs threatened to reduce profits or, in the case of government, unduly burden the treasury. Of equal concern was how the flow of paper became clogged and unpredictable. By 1914, office managers were realizing the advantages of applying some of the new principles of "progressive" administration to white-collar work. They became convinced that by rationalizing the office, administration would become a more effective tool in their hands.

This overview of the administrative revolution, focusing on the economic, organizational, and occupational changes underlying the evolution of modern records keeping, has direct bearing on the role of archivists. The mountain of paper generated by modern administrative systems is the very stuff of archives. The archivist's mandate to identify, understand, and preserve these records overlaps the interests of the sociohistorical scholar at important points. The study of the origin and evolution of business documents and records-keeping systems in the early twentieth century — which is vital in archival work — proceeds from the socioeconomic context of records administration outlined in this article. But the alliance between archivist and researcher does not stop here. With respect to administrative records, archivists are in a unique position to assist research. Corporate and government records help scholars reconstruct the social, economic, and organizational forces shaping individual experiences. But personnel files, salary ledgers, departmental correspondence, employee magazines, and so on, contain much more than information about the economy — they document the working conditions and social position of the growing battalion of clerks. Much of recent working class and labour history, as well as sociological studies of the workplace, have tended to examine blue-collar and, therefore, male workers. Female clerks, despite their growing presence in the twentieth-century labour force, remain something of a mystery. Archivists, then, can make a key contribution by identifying sources which allow the scholar to look beyond "the record" to catch glimpses of the daily lives of the clerks who toiled to create and preserve it. A fruitful division of labour between archivists, sociologists, and historians can be forged to investigate the human side of the administrative revolution.