
Literacy, Jobs, and Industrialization

No amount of literary cramming will make a good, loyal, intelligent citizen out of a reluctant child. But a craftsman who loves his work and takes pride in his work, who would rather do his work than joy-ride over the country—such a craftsman cannot be a disloyal, unintelligent citizen, even though he can neither read nor write. But, of course, he would have mastered these arts without wasting eight years of his life on them, endangering his health to boot.

FREDERICK PHILIP GROVE
"A Search for America" (1927)

In 1848, Egerton Ryerson, the Chief Superintendent of Education for Upper Canada, addressed "The Importance of Education to a Manufacturing, and a Free People." Commencing from the premise that a system of mass public education was a prerequisite to a system of manufacturing—the symbol of the incoming social order—he proclaimed that "education is designed to prepare us for the duties of life." Although, as we have seen, those duties were primarily moral and social, Ryerson did not neglect proper preparation for work. "How," he asked, "is the uneducated and unskilled man to succeed in these times of sharp and skilful competition and sleepless activity?"¹

¹ *Journal of Education for Upper Canada, (J.E.)*, 1 (1848), 289–301; for English parallels, see Central Society of Education, *Papers* (London, 1837–1839). On the centrality of morality in nineteenth-century education see esp. Alison Prentice, "The School Promoters: Education and Social Class in Nineteenth Century Upper Canada,"

One year later Ryerson elaborated his views about the relations between occupational success, formal education, and literacy. Discussing "Canadian Mechanics and Manufactures," he claimed that the mechanic "will be a member of society; and, as such, he should know how to read and write the language spoken by such society. . . . This supposes instruction in the grammar or structure of his native tongue." Although one might advance in the working world without education, Ryerson admitted, he would remain fundamentally at a loss:

I have known many persons rise to wealth and respectability by their industry, virtues and self-taught skill; but from their utter want of training in the proper mode of writing, or speaking, or reading their native tongue, they are unable to fill the situations to which their circumstances and talents and characteristics entitle them, and in which they might confer great benefits upon society.

Social order and progress were the supreme beneficiaries of all education, and, with other Anglo-American educators, Ryerson believed that "educated labour is more productive than uneducated labour." By "productive" he meant a variety of related qualities: less disruptive, more skilled, orderly and disciplined, punctual, and moral. Thus, the "proper education of the mechanic is important to the interests of society as well as to his own welfare and enjoyment."²

As the preceding chapters have argued, the key issues are much more complex than Ryerson's, or many others', statements allow. How important have literacy and schooling been to occupational and economic success? Traditional wisdom, modern sociology, the rhetoric of modernization, and nineteenth-century school promotion all celebrated the role of education in determining success. Yet not all the evidence, past or present, lends credence to this view. Consider these examples—the first a help-wanted advertisement, the second an educational study:

Wanted immediately FORTY ABLE BODIED MEN, to serve as JUSTICES OF THE PEACE, for the COUNTY OF HURON. A plain English Education is desirable but not indispensable—each candidate must be able to make his mark, unless he has learned to write his name, and will be expected to pro-

unpub. Ph.D. Diss., University of Toronto, 1974. (Published as *The School Promoters* [1977]); Ch. 1, above.

² *J.E.*, 11 (1849), 19–20. Walter Eales, in *A Lecture on the Benefits to be Derived from Mechanics' Institutes*, February 5, 1851, made much the same argument: "the degree of credit or usefulness in this world depends infinitely more on well-directed and temperate activity than on the difference of original capabilities." (Delivered to the Toronto Mechanics' Institute [Toronto, 1851]).

duce a character signed by the Deputy Commissioner of the Board of Works and the Collector of Customs Goderich.

and

For all children, except the 10 percent who will earn a living by the use of their verbal ability there is a case for substituting practical for academic education.³

The relationship of education in general and literacy in particular to work, occupation, and their rewards remains an imprecise one, complex and often contradictory. This chapter explores that relationship, examining both the real and the perceived connections surrounding the economic value of literacy. The literacy levels and differentials of the urban Ontario working class are first reviewed in this intellectual context of the economic importance of education. The views of middle-class reformers and working-class spokesmen are examined. Finally, a case study based on the employment-contract ledgers of an Ontario lumbering firm is presented in order to isolate the importance of literacy to workingmen in a specific social situation. In sum, this chapter illuminates the contradictions in the perceived connections between education, employment levels, and economic development, to argue that literacy was not always central to jobs, earnings, and industrialization in the nineteenth century in the manner typically assumed.

I

Ontario in the 1860s and 1870s was an overwhelmingly literate society. Adult (20 years and older) literacy was over 90% as measured by the censuses of those years. In respect of wealth and occupation, there was superficially a significant degree of stratification by illiteracy; the majority of illiterates labored as semi- and unskilled workers. Large numbers, lacking education, also assumed positions of skill—positions which were maintained over the decade 1861–1871.

One hundred and thirty-five illiterates in Hamilton, Kingston, and London held skilled laboring and artisanal occupations in 1861; 44 held higher-ranking jobs. Open to at least some uneducated persons were the occupations of bailiff, engineer, grocer, inn-keeper, mason, merchant,

³ Hamilton *Spectator and Journal of Commerce*, December 6, 1848; John Duncan, *The Education of the Ordinary Child* (London, 1943), 60.

manufacturer, molder, printer, tailor, tavernkeeper, tinsmith, wheelwright, shoemaker, and watchmaker (as is shown in Table 5.1). No single occupation in Hamilton, in fact, comprised a majority of illiterates. Only 25% of adult common laborers, 15% of seamstresses, and 5% of female servants could not read or write. The remainder—and the greatest numbers—of those occupying these low-status positions were literate. Seventy-five percent of the unskilled and 93% of the semiskilled possessed the skills of literacy, but nevertheless were unable to climb higher in occupational level. The acquisition of some education, as signified by their literacy, did not enable them to overcome the dominance of ethnic and class ascription in attaining rank and status in an unequal social structure.

The distribution of wealth in these cities strikingly parallels that of occupation. The majority of illiterates whose wealth could be determined (as measured by total annual value in the 1861 city assessment rolls) were poor; that is, below a poverty line struck at the 40th percentile of the assessed population. Nevertheless, sizeable numbers of illiterate workers achieved at least moderate economic standing, and the majority of all poor were literate. Illiteracy did not consign all men to poverty, and, conversely, many literate workers remained poor. Illiteracy could be depressing occupationally or economically, but literacy proved of remarkably limited value in the pursuit of higher status or greater rewards.

More revealing than these occupational and economic profiles is the relationship of literacy to the economic rewards of occupation. Among the unskilled and the semiskilled, very little economic advantage accrued to the literates. Literacy, though, had a greater role in the attainment of skilled or artisanal work and their commensurate rewards. Some illiterates, nevertheless, fared well, especially those few in nonmanual or small proprietary positions.

The possession of literacy did have rewards, though its benefits were hardly clear or unambiguous; overall, they were rather limited ones. The relationship of education to work and earnings was quite complex, as we have seen, complicated by other determinants, usually ascriptive social-structural ones: ethnicity, social class, race, age, and sex. Illiterates' standing, as a result, was far from uniform or homogeneous; they were differentiated and stratified in the same ways as others in the cities. Consequently, Irish Catholics (illiterate or not), women, blacks, and the aged are generally found in the lowest occupational or economic classes. More than literacy operated in the establishment and maintenance of the rigid stratification of nineteenth-century cities. Education

Table 5.1*Illiterates; Selected Occupations, 1861*

	Hamilton	Percentage of Hamilton adult workforce	Kingston	London
Barber	2	10.5	3	1
Blacksmith	8	10.3	—	2
Builder	2	7.2	—	1
Cabinet maker	1	1.9	—	—
Carpenter	14	4.7	4	4
Clergymen	1	3.2	—	—
Clothier	2	13.3	—	—
Constable	1	11.1	—	—
Customs collector	1	33.3	1	—
Dealer	1	9.1	1	—
Dressmaker	1	1.4	2	—
Engineer	1	2.1	1	1
Farmer	3	10.0	3	2
Grocer	1	1.1	1	1
High bailiff	1	50.0	—	—
Innkeeper	1	6.7	3	—
Joiner	1	5.9	—	—
Laborer	205	25.2	105	83
Mail conductor	2	50.0	—	—
Mariner	1	2.0	10	—
Merchant	1	0.9	—	—
Mason	2	3.9	3	1
Molder	2	3.6	—	—
Painter	2	3.2	—	—
Pedlar	2	6.1	1	1
Printer	1	2.5	1	—
Scamstress	8	15.1	2	—
Servant (f)	33	6.1	34	—
Tailor	8	6.2	8	—
Tavernkeeper	7	9.3	1	—
Tinsmith	2	5.1	—	—
Wagonmaker	2	18.2	—	—
Wheelwright	1	50.0	—	—
Gentleman	1	1.5	1	—
Watchmaker	1	7.2	1	—
Porter	3	4.8	1	2
Teamster	4	13.3	—	—
Plasterer	3	6.9	—	2
Clerk	—	—	1	—
Shoemaker	8	5.6	4	4

alone seldom altered class or social position dramatically; its influence was overwhelmingly a reinforcing one.

Education and literacy did not reduce the role of class or status as the urban society was gradually transformed by modernization and industrialization. At the same time, social mobility was possible for persisting illiterates, 1861 to 1871, the usual expectations to the contrary. Occupationally, stability was the most common experience, as skilled workers maintained their positions, not falling to lower class ranks. Economically, improvement in wealth and property dominated, regardless of occupation or ethnicity.

An absence of literacy and a lack of education did not remove all opportunities for higher-ranking occupations or the acquisition of wealth. Ethnicity favored some illiterates and hindered others; factors such as chance, personality, and motivation figured, too, undoubtedly mitigating some of the disadvantages that illiteracy and ascription could carry. An illiterate could achieve some success in the working world of the nineteenth century. These conclusions form one baseline against which to assess the rhetorical claims of middle-class school promoters and by which to understand the criticisms and aspirations of the working class. Much more than the skills of literacy were at stake to them; other issues were thought to be at least as central to the curriculum of the future workers.

II

Industry, skills, and wealth could be obtained by the individual with no schooling; education, nevertheless, was viewed as fundamental to the development and the maintenance of the economic system, as it was to the social order. The claims of the schoolmen stressed educated, literate labor for productivity and benefit to both society and individuals. As Ryerson stated it, "Every man, unless he wishes to starve outright, must read and write, and cast accounts, and speak his native tongue well enough to attend to his own particular business."⁴

Egerton Ryerson long affirmed that education underlay any of the main branches of career pursuits. In his first report, of 1846, he laid the foundation for future statements: "The establishment of a thorough system of primary and industrial education, commensurate with the population of the country, as contemplated by the Government, and is

⁴ *J.E.*, VII (1854), 134.

here proposed, is justified by considerations of *economy* as well as of patriotism and humanity." With evidence from Switzerland, he argued that uneducated workers have neither the logic for, nor capacity of making sound deductions or collecting observations to aid their work. "This want of capacity of mental arrangements is shown in their manual operations." Quite simply, it was the well-informed, well-educated workers who were thought to produce the most and the best, to possess superior moral habits, and to save money. Uneducated, illiterate workers, presumably, did not.⁵

Little doubt or hesitation accompanied the proclamations of the benefits of education to the economy or the individual workers. Yet it is important to note, with Alison Prentice, that "statements relating specific occupational groups to social status tended to be vague and contradictory." To Ryerson, there were but two kinds of workers: they were either "rude, simple or uneducated" or they were educated. These were also the classes of society, as status increasingly included demeanor and gentility as well as skills attained. "And by skills, few school promoters meant manual dexterity." Literacy was just one skill, important but not the only one; education's benefits involved the transmission of the proper code of behavior, including morality and correct attitudes. Literacy revealed that the training had begun.⁶

More than upward mobility through education, Ryerson emphasized the loss of status and downward mobility, which he claimed would accompany the lack of schooling. Educated men might advance; the uneducated would surely fall. The burden he placed on the shoulders of fathers: "Does a man wish his sons to swell the dregs of the society—to proscribe them from all situations of trust and duty in the locality of their abode—to make them mere slaves in the land of freedom? Then let him leave them without education, and their underfoot position in society will be decided upon." Ryerson further taught that workers were not to be educated to despise their occupations. Not all men should aspire to the highest statuses of work; "practical" men were needed too, and the supply of farmers and mechanics must not diminish. Education therefore must not alienate labor; and it should not, for labor, he added, did not deaden the mind. The ideal mechanic would combine "in his own person, the qualifications and skills," of both the manufacturing superintendent and the operative. All members of the working class thus required that which "is essential to the successful

⁵ "Report on a System of Elementary Instruction for Upper Canada, 1846," in *Documentary History of Education for Upper Canada (D.H.E.)*, ed. J. G. Hodgins, 6 (Toronto, 1899), 143 (emphasis added), 144-145.

⁶ Prentice, "School Promoters", 150, 174; *J.E.*, V (1852), 133.

pursuit of any one of the several departments of human activity and enterprise." This consisted of "what is rudimental, or elementary in education"; in addition to reading, writing, arithmetic, and grammar, "each must learn that which will give him skill in his own particular employments."⁷ Not at all inclusive of specific job skills, this training made for more productive and more easily managed labor; advancing the nation's development took precedence over the individual among education's benefits.

Ryerson was hardly an isolated spokesman for the economic contributions of education; he was joined by many others throughout Anglo-America.⁸ Charles Clarke was one such reformer. His 1877 address to the South Wellington, Ontario, Teachers Association shows the persistence of the ideas Ryerson had enunciated. "No unprejudiced man," Clarke asserted, "can conceal from himself the fact that education has lightened the toil of the laborer, increased his productive ability, surrounded him with comparative luxuries, and materially increased the purchasing power of his daily wage." Recent economic and labor history describe the period very differently, of course. Regardless, he argued that uneducated men were heavily handicapped in "the race of and for life," and that they were "sinking, more rapidly and certainly than ever, into the position of mere hewers of wood and drawers of water."⁹

More so than Ryerson, Clarke, or most others, Horace Mann, the first Secretary of the Massachusetts State Board of Education, fully elaborated these ideas. Mann was Ryerson's contemporary and associate,

⁷ *J.E.*, 1 (1848), 297. See also Rev. John May, *Essays on Educational Subjects* (Ottawa, 1880), 19; *D.H.E.*, 11, 45. It must not be ignored that education, in the Methodist view, was not only moral and occupational preparation, but it was the training for one's calling. "The Importance of Education to an Agricultural People," *D.H.E.*, 7, 141. See also, Allan Smith, "The Myth of the Self-made Man in English Canada, 1850-1914," *Canadian Historical Review*, 59 (1978), 189-219.

⁸ For English examples, see Richard Johnson, "Educational Policy and Social Control in Early Victorian England," *Past and Present*, 49 (1970), 96-119, "Notes on the schooling of the English working class, 1780-1850," in *Schooling and Capitalism*, ed. R. Dale, G. Esland, and M. MacDonald (London: Routledge, Kegan Paul, 1976), 44-54; E. G. West, *Education and the Industrial Revolution* (London: Batsford, 1975), "The Role of Education in 19th Century Doctrines of Political Economy," *British Journal of Educational Studies*, 12 (1964), 161-174. For the U.S., see Alexander J. Field, "Educational Reform and Manufacturing Development in Mid-Nineteenth Century Massachusetts," unpub. PhD. Diss., University of California, Berkeley, 1974, summarized in "Educational Expansion in Mid-Nineteenth-Century Massachusetts," *Harvard Educational Review*, 46 (1976), 521-552; Michael B. Katz, *The Irony of Early School Reform* (Cambridge, Mass.: Harvard University Press, 1968), "The Origins of Public Education," *History of Education Quarterly*, 14 (1976), 381-407; Samuel Bowles and Herbert Gintis, *Schooling in Capitalist America* (New York: Basic Books, 1976).

⁹ *Teachers and Teaching (and) Then and Now* (Elora, Ontario, 1880), 2.

and the Ontario reformer quoted from his reports and exchanged information with him. For this reason as well as because of Mann's overall contribution to the development of educational thought and institutions in the nineteenth century, his opinion merits discussion.¹⁰

Horace Mann devoted much of his *Fifth Annual Report* (1842) to the economic benefits of education; in so doing, he entered into much greater detail than Ryerson or most other promoters. Both men favored arguments for education rooted in moral principles and civic virtues, though both made appeals to the economic self-interest of their audiences. As Mann expressed it, such self-interest, of all the "beneficent influences of education, may, perhaps, be justly regarded as the lowest . . ." yet "it represents an aspect of the subject susceptible of being made intelligible to all. . . ." Mann's primary objective in the *Fifth Report* was to argue that education was the most productive enterprise that could be undertaken by an individual or a community. To make this claim was certainly not novel; Mann, however, by surveying manufacturers, collected "hard" evidence to prove his assertions. His questionnaire, sent to selected men, inquired, principally, as follows:

Have you observed differences among the persons you have employed, growing out of differences in their education, and *independent of their natural abilities* . . . that is, [do] those who . . . have been accustomed to exercise their minds by reading and studying, have greater docility and quickness in applying themselves to work [and] greater appetite, dexterity or ingenuity in comprehending ordinary processes, or in originating new ones?

His major concern was, of course, "How do those who have enjoyed and improved the privilege of good Common Schools, compare with the neglected and the illiterate?" The answers to the queries were hardly surprising: the manufacturers responded that "the rudiments of a Common School education are essential to the attainment of skill and expertness as laborers"; "very few, who have not enjoyed the advantages of a Common School education, ever rise above the lowest class of operatives." Uneducated labor was unproductive, and the best educated were both the most profitable and the best paid. They were also more moral, loyal, cheerful, and contented as well as more punctual and reliable—or so the replies indicated.

Pleased, Mann proclaimed that these answers "seem to prove incontestably that education is not only a moral renovator, and a multiplier of intellectual power, but that it is also the most prolific parent

¹⁰ See David Orr, "Egerton Ryerson's Philosophy of Education: Something Borrowed or Something New?" *Ontario History*, 61 (1969), 77-86; Ryerson, "Report upon a System." On Mann, see Jonathan Messerli, *Horace Mann* (New York: Knopf, 1971); Katz, *The Irony*; Field, "Reform."

of material riches." Knowledge, he concluded, must precede industry: intelligence was the "great money-maker."¹¹ Ryerson and Mann joined in recognizing the mid-century spirit of progress and materialism, asserting in their educational promotion the productive contribution of common-school training. Proof was another issue, however, as Mann went further in providing evidence, thinking it insufficient merely to repeat the rhetoric of his witnesses.

Two of Mann's respondents attempted to estimate the wage differentials accruing to literate workmen. One manufacturer noted that literate employees (name-signers as opposed to markers) earned, on the average, about 27% more than illiterate ones; another claimed an 18½% difference. They then calculated the wage differentials between the highest paid literate workers and the lowest paid illiterate ones at 66 and 40%, respectively. Mann throughout his *Report* referred to these estimates as *conclusive* evidence to support his viewpoint, although these data were more impressionistic than statistical. Although his argument was presented in the guise of arithmetical exactness, the analysis of the rate of return to investments in primary education remained vague and overly rhetorical. The only explicit calculation he offered was a new wage difference of 50%.

There are grave problems both with Mann's method of obtaining that figure and with his use of it. He apparently simply averaged the two extreme examples of wages—not the group averages—looking solely at atypical cases. Had he used the average wages reported to him, the result would have been less than half of his 50% differential: 23%, far from such a huge variation, and still unreliable when based on a sample of only two firms. Mann also failed to show that additional education for each child was economically profitable, exaggerating differences between markers and signers, and ignoring the factors of age and ethnicity. He further confused the value of education to parents with its worth to the community, firms, or individuals—these could be very different. Finally, his use of wage rates ignored the imperfections of the labor market, social inequality, and discrimination. In sum, we must agree with Maris Vinovskis, that "it is likely that Mann's figure of 50% for primary education greatly exaggerates the actual produc-

¹¹ *Annual Report of the Secretary of the Board of Education*, 5 (Boston, 1842), 81, 87–89, 90, 100. On the biases inherent in Mann's survey, see the *Annual Report*, *passim*; Maris A. Vinovskis, "Horace Mann on the Economic Productivity of Education," *New England Quarterly*, 43 (1970), 550–571. Soltow and Stevens ("Economic Aspects of School Promotion," *Journal of Interdisciplinary History*, 8 [1977], 236) provide an Ohio example.

tivity of education during that period. A much more likely estimate would be in the range of 10–20%.”¹² If this is the case, the contributions of education to productivity must be evaluated in very different terms.

Another perspective emerges from the pages of the *Fifth Report*. Each of Mann’s respondents concentrated (as did Ryerson) on the fact that educated workers were clean, moral, better able to follow directions, more punctual and reliable, and less likely to be unreasonable or violent during periods of labor unrest. In many ways, these were the most valued, and “productive,” teachings of the common school—more so than cognitive skills. Alexander Field, in examining the “coincidence” of educational reform and the development of manufacturing in Massachusetts in this period, stresses industry’s need for properly socialized labor. Importantly, he discovered that manufacturing expanded in the context of (and with the effect of) declining skill requirements—not of increasing skill demands. Manufacturers needed a disciplined, deferential, orderly, and honest labor force, and themselves worked with and through professional school reformers for the expansion of education at state and local levels (as other manufacturers did in Canada and England).

Recent research emphasizes the same point, stressing the importance of the molding of noncognitive personality characteristics as a major aspect of schooling. Gintis, for example, found that the contribution of education to earnings or occupational status can not be explained by the relationship between schooling and cognitive achievement. He demonstrates, rather, that the noncognitive personality traits stressed in schools, such as subordination and discipline, have a more direct influence on worker earnings and productivity. “The structure of social relations in schools reproduces rather faithfully the capitalist work-environment,” he concluded.¹³ This was the result of the moral economy and of

¹² Mann, *Fifth Annual Report*; Vinovskis, “Mann”, 568. This discussion is indebted to the work of Vinovskis, Part II. See also, Frank Tracey Carleton, *Economic Influences upon Educational Progress in the United States, 1820–1850* (Reprinted: New York: Teachers College Press, 1965), Ch. 4; Field, “Educational Reform.” On the relationship between literacy and inventiveness, so prized by Mann, see the fascinating article by Eugene Ferguson, “The Mind’s Eye: Nonverbal Thought in Technology,” *Science*, 197 (1977), 827–836. See also, A. F. C. Wallace, *Rockdale* (New York: Knopf, 1978), 237 ff.

¹³ Field, “Reform”, esp. Chs. 8–9; Herbert Gintis, “Education, Technology, and the Characteristics of Worker Productivity,” *American Economic Review*, 61 (1971), 266–279; Bowles and Gintis, *Schooling*, Part Two; Robert Dreeben, *On What is Learned in School* (Reading, Mass.: Addison-Wesley, 1968). See also, E. Verne, “Literacy and Industrialization,” in *A Turning Point for Literacy*, ed. Léon Bataille (New York: Pergamon Press, 1976), 211–228; Ivar Berg, *Education and Jobs* (Boston: Beacon Press,

educational hegemony, expected from the carefully structured provision of literacy.

The contradictions between promoters' emphasis on skills and individual wages (undoubtedly central to popular acceptance of public schooling) and society and industry's behavioral requirements are extremely important in understanding the relationships between literacy, jobs, and development. Dr. Edward Jarvis' discussion of the specific ways in which education enhanced the skills of common laborers illustrates the dimensions of the connections, with his amusing and novel presentation of the manifold benefits. Jarvis analyzed the "processes of labor" of woodcutters, woodsplitters, turners, coalheavers, shovellers, and others in order to compare educated and uneducated workers. He perceived, pseudoscientifically, that

The discreet shoveller [to take one case] carries his shovel to a point in the circle when the tangential movement, modified by gravitation, shall describe a curve which at its highest part is above the cart-wheel. . . . As the blade of the shovel is held at right angles with the plane of the curve of motion, all the contents are carried in a curve of the same radius . . . and all fall together in to the vehicle in a compact mass; none are lost on the way.

In contrast, the uneducated laborer or

thoughtless workman, unaccustomed to noticing the exact relation to things, and having no comprehensive plan of his operations, places his cart by accident. . . . Or, as chance, not intelligent observation, governs this matter, the receptacle may be so far off as to require the workman to walk a step or two. . . . Nor is this dull laborer always mindful of the position of his shovel when he throws its contents.

Experience, knowledge acquired from others, and common sense are ignored, relegated behind the promoted benefits of schooling. Still, it remains unclear how common schooling would aid the worker in the ways Jarvis stressed. What neither Jarvis nor Mann or Ryerson revealed was how education specifically benefitted the future workers in opening their eyes, comprehending their work, or applying their powers for best effect. How many sawyers, splitters, coalheavers, or shovellers needed or

1971); G. D. Squires, "Education, Jobs, and Inequality," *Social Problems*, 24 (1977), 436-450; Alex Inkeles and David H. Smith, *Becoming Modern* (Cambridge, Mass.: Harvard University Press, 1974); James Bright, "Does Automation Raise Skill Requirements?," *Harvard Business Review*, 36 (1958), 85-98, "The Relationship of Increasing Automation and Skill Requirements," in *Report of The U.S. National Commission on Technology, Automation, and Economic Progress*, Appendix Vol. II (Washington, D.C.: G.P.O., 1966), 203-221. See also Note 50.

acquired much education for their jobs, and how much schooling was required to develop these vaunted mental skills? Were the skills of the common schools those necessary for productive labor? These questions went unasked and unanswered, for the primary assumption went unchallenged: "Education . . . is the economy of force, and gives it a greater power to create value. It enables the intelligent and skillful to add more to the worth of matter than the ignorant."¹⁴ In addition, they confused knowledge and intelligence with schooling and literacy; skills from experience and what might be termed "technical literacy" were simply not considered. In this manner, promotion stressed increased skills, productivity, and returns (individual and other) from educational reform and expansion. The results of education added significantly to productivity, economic development, and social order; the process through which they were accomplished was a rather different one from that typically emphasized.

Contemporary sociological debate continues to focus on the relationship between education and occupational attainment, illustrating persisting interest in the importance of this issue. Recent data, significantly, enter into our conclusions about the role of literacy and schooling in the past, contradicting assumptions of a direct link between school achievement and job attainment. The methodological classic of the 1960s, Peter Blau and Otis Dudley Duncan's *The American Occupational Structure*, marked a watershed in the current controversy. Analyzing a special 1962 Current Population Survey, these sociologists found that "the chances of upward mobility are directly related to education," that mobility for individuals "is simply a function of their education and their social origins," and that "occupational status in 1962 apparently is influenced more strongly by education than by first jobs." Blau and Duncan, though, qualified these sweeping generalizations in three important aspects.

They argued that education, historically viewed, had been less important to occupational status than it has become in recent decades. The evidence presented here could suggest that, in some ways, this might be true. Second, they stressed the importance of social-class origins (ascription), which they found played a major role in accounting for

¹⁴ Edward Jarvis, M.D., "The Value of Common-School Education to Common Labour," *Report of the United States Commissioner of Education* (Washington, D.C., 1872), 572-585, 577, 574, 585. On Jarvis, see G. N. Grob, *Edward Jarvis and the Medical World of the Nineteenth Century* (Knoxville: University of Tennessee Press, 1978). See also *Report* (1870) 465-466; John Eaton, *Illiteracy and its Social Political and Industrial Effects: An Address* (New York, 1882). Eaton was the U.S. Commissioner of Education.

both education and occupation, notwithstanding the amount of mobility they discovered. Finally, they concluded that "the direct effects of education and father's status are attenuated drastically with the passage of time." A compensatory effect derived from the increasing importance of the accumulation of occupational experience. Blau and Duncan, nevertheless, maintained the importance of education in their conclusions, aside from these basic qualifications.¹⁵ Other researchers, however, have quickly supplemented their findings, revising them to conclude that education is less directly related to occupational attainment.

Ivar Berg, in particular, demonstrated that these commonly perceived relationships between education and jobs are an endemic part of modern democratic mythology.¹⁶ Berg discovered that it is simply impossible to construct an occupational scale according to the intellectual abilities required by diverse occupations. Recent census data (1950, 1960) also contradict the Blau-Duncan findings. Instead of showing education becoming more important, they reveal "a distinct drift of 'better' educated people into 'middle' level jobs and a reduction in the number of 'less' educated people who move up into middle-level jobs. . . ." Education has expanded more rapidly than the net change in skill requirements (there may not be much more of a fit in terms of skills than in the nineteenth century). The problem then becomes whether education—at all levels—might offer less in rewards than it engenders in expectations, making underemployment a serious concern, as it is today.

Berg's, and also Squires', examination of job requirements in a number of firms found self-fulfilling prophecies of the value of educated workers to be rampant among managers. Not only is there overeducation for requirements, there has been little, if any, relationship between changes in educational level and changes in output per worker. (Ryerson and Mann would have shuddered!) And in some plants "educational

¹⁵ (New York: John Wiley, 1967), 156, 159, 170, 180, 195, 187; among a large literature (see references in Chs. 1-3, above). See also, John Porter, *The Vertical Mosaic* (Toronto: University of Toronto Press, 1965), 189-195. Revision of traditional relationships has just begun in Canadian sociology, and while there is no critical study yet published, many sociologists support the critiques elaborated below as highly relevant to the Canadian scene. The issues, needless to add, are highly controversial and value-laden, especially in their implications for the nature of modern society and social policy.

¹⁶ *Education and Jobs: The Great Training Robbery*, Ch. 1. See also, Squires, "Education," for additional evidence; Jencks *et al.*, *Inequality* (New York: Basic Books, 1972), as examples (see other references in Chs. 1-3, above). See too, David Noble, *America by Design* (New York: Knopf, 1977), esp. Chs. 8-9; Harry Braverman, *Labor and Monopoly Capital* (New York: Monthly Review Press, 1974); Bright, "Automation."

achievement was *inversely* related to performance;" "the less productive workers were slightly better educated." Education, then, may be predictive of initial salary and job title, but not promotion. Finally, in professional and managerial positions, educational achievement, Berg found, was rewarded, rather than performance! "To argue that well-educated people will automatically boost efficiency, improve organizations, and so on may be to misunderstand in a fundamental way the nature of American education, which functions to an important, indeed depressing extent as a licensing agency."¹⁷ Schooling of course serves more of the former role among the less-well educated, but this is hardly what is usually meant by productive skills. These arguments, regardless, are a direct legacy from the nineteenth century; their veracity then and now we have good reason to doubt.

To a significant extent the spokesmen of the labor movement in Canada (and the United States and Great Britain) in the last third of the nineteenth century agreed with the voices of middle-class school promoters in their discussions of the benefits of education; they accepted much of the schools' hegemony. To an important degree, however, labor's views were scored by a tension between a hunger for public schooling and very real doubts about the value of the formal education being offered. To them, education represented something more than just the making of better workmen, in spite of their assent to schooling's value.

That workers desired educational provision can not be doubted. Their case was put forth in the first issue of the *Ontario Workman*, in 1872: "A thorough and general system of education we consider to be one of the first duties of the state; to see that in all its branches it is placed as near as possible within the reach of every son and daughter of the land." The whole body of workmen should be raised by education and mental training to a higher intellectual level, not merely to permit isolated cases of social advancement. As the *Hamilton Palladium of Labor* claimed, "An education is the practical side of American industrial success. In the industries where your working people have the best common school education, there you will find them earning the best wages." This situation, we need to note, was also related to the absence of child labor and therefore to the absence of cheap competition, in labor's didactic participation in educational promotion. For education cut two ways in its benefits for workingmen: First, education was valuable in raising and maintaining wages and standards of labor, while it

¹⁷ Berg, *Education*, 40-41, 59, 80-3, Ch. 5, 87, 104; Squires, "Education", 439-440.

restricted the supply of workers. Second, "Educated workmen, skilled workmen, and moral workmen . . . [made] labor respected as well as profitable."¹⁸

To make better workers was not the sole emphasis of the labor press, and their educational program was not quite that which Ryerson *et al.* had urged. Education ought to be mechanical, scientific, and technical: for the hand and body as well as the mind. They recommended a combination of work and study, four hours of each per day. Having an idea of common-school education different from that of Ryerson, Clarke, Mann, and Jarvis, the spokesmen of the working class sought a preparation in job skills of a different kind, and articulated a different perspective on the place of literacy. What they wanted was in part a schooling that was practical and related to future occupations. "It is generally felt," the *Palladium* echoed, "that our educational methods are too one-sided. They do not develop the constructive faculties as they might. The adoption of industrial education would do much to enable those of the pupils who, on leaving the school follow mechanical operations to take higher positions than they otherwise occupy by reason of the training secured." Traditional forms of practical training were found wanting (vocational and industrial education, which never precisely met these desires, were not introduced into the school curriculum until the 1890s and 1900s). *Fincher's Trades Review*, a Philadelphia workingmen's weekly read by and concerned with Canadian labor, reported that apprenticeship was fast declining and that regulation was required; the period of indenture had become too short and incomplete. One problem was that masters neglected the education of their charges.¹⁹

This neglect was not solely a U.S. concern, as an examination of Upper Canadian indentures reveals. Of the fourteen-odd documents that could be located, representing a handful of nonmanual, skilled, and semiskilled occupations, only half (servant, tailor, carpenter) made any provision for education in the contract. The issue of schooling was not mentioned for a turner, patternmaker, shoemaker, machinist, miller,

¹⁸ *Ontario Workman (O.W.)*, April 18, 1872; March 13, 1873; *Palladium of Labor (P.O.L.)*, (Hamilton, Ontario), May 16, 1885, February 7, 1885. See also *Fincher's Trades Review (F.T.R.)*, (1863-1866), a Philadelphia workingmen's weekly, read by and concerned with Canadian labor, which included letters from Canadian workmen: September 24, 1864, February 4, 1865. On the context of working-class attendance, see Davey, "Educational Reform and the Working Class," unpub. Ph.D. Diss., University of Toronto, 1975.

¹⁹ *O.W.*, May 2, 1872, January 16, 1873, February 12, 1874; *P.O.L.*, December 22, 1883, February 23, 1883, September 19, 1885, August 16, 1884; *F.T.R.*, July 18, 1863, July 11, 1863, November 15, 1863, July 9, 1864, September 24, 1864, May 13, 1865.

draper, or a stonecutter. If the sample is tiny and spans without visible trend a lengthy period, the 50% neglect of schooling remains indicative.²⁰

The crux of the issue, in labor's interpretation, was that masters wanted the most work for the least costs. "The desire to make his boys finished workmen, to fit them by night or day schooling for the better comprehension of the business, or to qualify them for advancing in the higher branches, of art and science, scarcely ever enters the master's mind." The sad results left youngsters conscious of their inferiority, not aspiring to any position higher than the one they had been taught, and often slipping to day labor. "Botches" were created among the industrious classes each year.²¹

Education nevertheless was not viewed primarily as job preparation; it represented a higher ideal and a different goal. A boy "should be regarded, rather as the man that will be, than as the future doctor, lawyer, tradesman, farmer or mechanic." Would such education intersect with economic productivity? The *Workman* suggests that workers were not to be educated to increase the value of capital through their labors. They were not simply *to be* educated: "They must educate themselves to think; they must also learn to think for themselves." To a large degree, education was to instill a direction, a goal, and the correct set of personal qualities—all more important than skills or a mere hunger for gold. Education was, in one sense, character-building; it enabled workers to see their calling as useful and dignified. Morals, wisdom, and honorable careers ranked above the skills of the job. Were such men the loyal, punctual, nondisruptive workers the mill-owners desired and Egerton Ryerson promised if allowed to fashion a system of common schools? Education could lead in a rather different direction as the *Palladium* saw it:

Educate first, agitate afterwards. Ignorance, superstition and timidity [timorousness] are the weapons which our oppressors have used most effectively against us in the past. Secure an education at any cost, put the ballot to its proper use, and then the fall of the venerable structure of legal robbery, alias monopoly, will shake to its centre. . . .²²

²⁰ The indentures examined are all those located in the Archives of the Province of Ontario (Toronto). See also D. T. Ruddell, "Apprenticeship in Early Nineteenth Century Quebec," unpub. M. A. Thesis, Laval University, 1969.

²¹ *F.T.R.*, September 24, 1864.

²² *O.W.*, February 13, 1873, January 22, 1873; *F.T.R.*, June 27, 1863, October 22, 1864, September 17, 1864, July 11, 1863; *P.O.L.*, November 24, 1883, November 22, 1884, January 5, 1884. See also Phillips Thompson, *The Politics of Labor* (New York, 1887), 11-14, who claimed that reading would open the eyes of the working man to the injustices of the system. Thompson, a Toronto radical journalist and autodidact, often contributed to the *P.O.L.* under the pseudonym Enjolrus.

Furthermore, the working class was more than a little ambivalent about education and its value; this tension brought contradiction to their apparent endorsement of mass public education:

"A self-made man" awakens in most all a glow of appreciation and regard which we do not feel for the man, equally distinguished for ability and learning he has got, who has been regularly taught in the schools. The latter has had the counter-sign, and has been invited into the fort, the other has scaled the ramparts and conquered his place.

Success without the assistance of education was admired above that "aided" by the schools, in sharp contrast to Ryerson's view. A curious tale related in the *Workman* indicates a further lack of esteem for education-related skills. A man in England, the story went, had been jailed. To obtain bail, he was advised that he must sign his name; overnight he taught himself to do so. The implications drawn are important; there was no a priori reason for illiterates or poor workers to be barred from the ballot. Inability to read or write need not disqualify a man from exercising his rights, nor did it signify an inability to carry them out. A final point is implied: When needed, one could quickly and easily gain some skills of literacy.²³

Ambivalence went even deeper. For example, *Fincher's Trades Review* reprinted "Proverbs of the Billings Family," which included "If you kan't git clothes and education too, git the clothes." A more interesting notice came from the Lawrence, Massachusetts, Mutual Benefit Society. The society began its operations with a system of bookkeeping for accounts, but "We are now doing it with checks. Our checks are printed on card board, of the following denominations . . . fifty cents, white; one dollar, blue; two dollar, yellow; five dollar, orange; ten dollar, salmon color. We find that this system is much easier than book-
ing. . . ." Store personnel and society members need not even know the decimal system or how to read numbers; the colors differentiated for them. Literacy need not figure in workers' everyday transactions.²⁴

More important in understanding the working class' awareness of the contradictions of educational promotion and programs is their analysis of the "evils" of the system. The *Palladium* urged its readers to learn a trade, not to be seduced by "class" education, with its examples in school of millionaires, for "schools love to dwell too much on the achievements of professional men." The school curriculum itself was found to be class-biased, and the ideas of classical literature anti-

²³ *O.W.*, April 2, 1874, October 14, 1872.

²⁴ *F.T.R.*, June 27, 1863, February 11, 1865.

workingmen. Or, as Phillips Thompson expressed it, education "if perverted by the inculcation of the untruths and half-truths of bourgeois political economy, is a hindrance rather than a help." This he called "wrong education," tempting the worker with self-aggrandizement and wealth. The system of state education, compulsory by the 1870s, taught reading but "then [gave] them dime novels for perusal, having previously given them a taste for such reading." Such an education—and use of literacy—was hardly desirable; it would not benefit the working class.²⁵

The greatest evil of all stood at the pinnacle of the educational system—the university, which all workingmen supported through taxation, but whose expense was prohibitive to most.

It is an injustice that all the farmers, mechanics, and laborers should be taxed to teach the sons of the wealthy merchants and professional men Latin and Greek, and to support a lot of imported professors at high salaries to inculcate false and undemocratic notions of social caste, and to teach an obsolete system of political economy. As a training for practical life and usefulness, the ordinary university education is well-nigh valueless.

The educational system, from the top down, was biased against the workingman and his children. Lest the working class be falsely accused of anti-intellectualism we note that the *Palladium* urged that as good an education could be secured by well-directed reading.²⁶

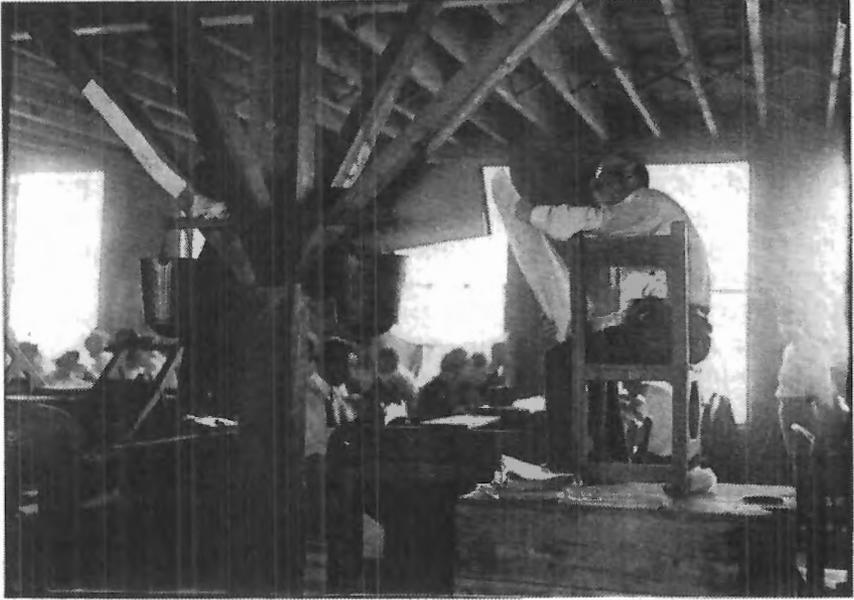
Reading, moreover, was often discussed in terms of amusement, enchantment, comfort, consolation, and leisure—in brief, noninstrumentally. "Let the torch of intelligence be lit in every household." The family hearth was the place for the taste for reading ("one of the true blessings of life") to commence, and where parents were to guard against the taint of bad books, magazines, or newspapers. Relief from toil came through literature, making "study the more refreshing," and the delights of reading and contemplation brought wisdom "in common with all mankind." Here lay one real value of literacy to workmen, for knowledge is always power, but not only in an economic or political sense.²⁷

Similarly, there were reasons more important than book-learning in the establishment of mechanics' institutes, workingmen's reading

²⁵ *P.O.L.*, November 10, 1883, August 29, 1885, August 16, 1884; Thompson, *Politics*, 17, 58, 83, 151, *P.O.L.*, February 2, 1884.

²⁶ *P.O.L.*, December 1, 1883; see also Thompson, *Politics*, 61, 171.

²⁷ *O.W.*, November 22, 1872, December 19, 1872, January 2, 1873, February 12, 1874, March 19, 1874; *P.O.L.*, March 1, 1884, September 1, 1883; *F.T.R.*, October 22, 1864, September 17, 1864, July 11, 1863. See Ch. 7, below; Richard Hoggart, *The Uses of Literacy* (Boston: Beacon Press, 1961).



Reading and working—transmitting information and news through the work group. “Reader in a work group, New York City, cigar factory,” 1909, by Lewis W. Hine. [International Museum of Photography, George Eastman House]

rooms, and ancillary public institutions. Workers needed a place to become better acquainted with one another, where their various interests could harmonize, where committees could meet. Two hours of leisure each day (related to demands for reduced hours) spent in mental and physical culture “would result in the shame and discomfiture of our opponents.” Knowledge, then, could be power in the purely political sense, much as Phillips Thompson would have it. Yet mass literacy need not be a requirement for the development of a shared consciousness, a common political culture, or the exchange of ideas or information. Only a few readers were needed to enlighten a large number if given the chance of congregation and the customary modes of communication. As E. P. Thompson argues, “Illiteracy by no means excluded men from political discourse.” They could listen and participate in discussion—at work, in reading circles, in pubs, or at ports of call. Activities such as those of the Luddites and “Captain Swing” support the argument, and contrary to the typical views of historians such as Robert Webb, upheavals can take place without printers. It was the areas lowest in literacy, for example, that experienced the greatest number of “Swing” actions.

Reading and writing, *Fincher's* found, were less important than the hammer, the sign of workingmen: "Only the hammer is all powerful and peaceful. . . . Without the hammer—a symbol of toil, as the pen is of thought, and the sword is of violence—the world could not exist in comfort and refinement." "The ability to read," moreover, E. P. Thompson reminds us, "was only the elementary technique. The ability to handle abstract and consecutive argument was by no means inborn; it had to be discovered amid almost overwhelming difficulties. . . ." Much more than literacy or education alone is required for cohesion, consciousness, and activity; social structural and economic factors, leadership and organization, psychology and motivation, numbers and opportunity are equally if not more important. Easier communication, which literacy can advance, may aid the process, but literacy is hardly the key variable.²⁸

Labor, in spite of its acceptance of hegemony and an apparent clamor for equal educational opportunity, deviated from the major premises of leading schoolmen who sought more education of the working class for greater productivity. Ambivalent about the proper role, form, and content of education, recognizing some contradictions, and often placing its benefits and application quite aside from their jobs, they sought to be free and independent, powerful in ways that would not have pleased the men who desired to have the masses educated. More fundamentally, they did not always equate education solely with the skills (in either an academic or a practical sense) required to gain and perform a good job.

Estimates, such as Horace Mann's, of a 50% greater return to educated laborers and corresponding increases in productivity from specific

²⁸ *F.T.R.*, March 18, 1865, April 8, 1865, November 7, 1863, January 16, 1864, April 23, 1864; see also October 3, 1863; *P.O.L.*, September 8, 1883. Ironically, Mechanics' Institutes in Canada, as in Britain, tended to be middle class in inspiration and in membership; see J. Donald Wilson, "Adult Education in Upper Canada before 1850," *Journal of Education* (U. B. C.), 19 (1973), 43-54; Foster Vernon, "The Development of Adult Education in Ontario, 1790-1900," unpub. Ed.D. Thesis, University of Toronto, 1969; J. A. Eadie, "The Napanee Mechanics' Institutes," *Ontario History*, 68 (1976), 209-221; E. Royle, "Mechanics' Institutes and the Working Classes, 1840-1860," *The Historical Journal*, 14 (1971), 305-321; Eales, *Lecture*. See also John Foster, "Nineteenth-Century Towns—A Class Dimension," in *The Study of Urban History*, ed. H. J. Dyos (London: Edward Arnold, 1968), 281-300, *Class Struggle in the Industrial Revolution* (London: Weidenfeld and Nicolson, 1974); Patrick Joyce, "The Factory Politics of Lancaster in the Later Nineteenth Century," *Historical Journal*, 18 (1975), 525-553; E. P. Thompson, *The Making of the English Working Class* (New York: Pantheon, 1967), 712-713; R. K. Webb, *The British Working Class Reader, 1790-1848*, (London: Unwin, 1955); Hobsbawm and George Rudé, *Captain Swing* (New York: Pantheon, 1969); Charles Tilly, *From Mobilization to Revolution* (Reading, Mass.: Addison-Wesley, 1978).

skills provided in public schooling, can not be accepted. A 10–20% differential puts the issue into a radically different perspective. Such a difference need not seem so significant to the average workingman, and major questions surround the reasons why he chose—and the majority did—to acquire some education and to send his children to school. An answer must lie in the relationships among the hegemonic functions of the school, the contradictions and ambivalence inherent in working-class attitudes toward education, the noneconomic importance of literacy, and the connection between literacy, skilled work, and its rewards. Equally important questions pertain to how much schooling made a significant difference in wages.

We must ask, moreover, why discussions of the productive contribution of education so rarely addressed specific job skills, beyond abstract thought processes, such as those so disarmingly recounted by Edward Jarvis. Certainly a major answer derives from the recognition of the moral bases of literacy—the moral virtues, attitudes, and behavioral traits—which Egerton Ryerson, Horace Mann, and manufacturers all held central to the making of a productive and malleable labor force. In this, they were undoubtedly correct. As Field and Gintis have found and Dreeben has argued, it is precisely the noncognitive functions of schooling, the concomitants of literacy transmission, which most directly relate to the creation of a workforce acceptable to modern capitalism. Schooling's contribution came from these other kinds of skills. Toward this end, the schools were designed to socialize, prepare, and assimilate the masses—and the schools were attended. Nevertheless, this does not sufficiently answer the basic query of how schooling related to the skills of specific occupations. Neither schoolmen nor labor spokesmen addressed this question to any meaningful degree, although it was a much more serious concern of the latter. So we do not yet know, beyond educated guesses or extrapolations from modern analogues, how much education a carpenter, shoemaker, mechanic, painter, storekeeper, or hotelkeeper would need to do his work. They might need arithmetic, but this could be gained without schooling.²⁹ Examples of the self-taught readers or writers are almost legendary, and they are central to working-class cultural traditions. But to what extent these skills, the tools based in literacy, were required remains questionable for those not employed

²⁹ *Massachusetts Teacher*, 15 (1862), 10, May, *Essays*, 23, reinforces the point: "Men who could neither read nor write have lived, some of them not unsuccessfully; but without Arithmetic nobody has ever lived, or can live." Not only did children come to school knowing how to count, as the *Massachusetts Teacher* reported, May implies that arithmetic literacy neither implies or correlates with alphabetic literacy. See also, Bright, "Automation."

in professional or clerical endeavors. Practical job skills were not part of the literacy-centered common school curriculum.

It is very possible that reading was not often required in the search for employment. Advertisements for jobs are rarely found amidst the plethora of announcements and solicitations in nineteenth-century newspapers. Work was most often gained informally, as Gareth Stedman Jones reports for the labor market of London, England, in the second half of the century. Workers circulated among the trades, from one to another in a seasonal pattern:

Skilled workers could gain information about the availability of work either from press announcements or from local trade union branches. But neither of these channels was really open to the casual worker. The only way he could find out about work was either by chance conversations in pubs or else by tramping around the yards and workshops in his districts . . . being known at local centres of casual work was more important than degree of skills and where character references were not required.³⁰

Reading and writing were to such men—a sizeable proportion of the workforce in nineteenth-century cities—relatively inconsequential to their searches for work, perhaps relatively unimportant in doing a good job. Stedman Jones' conclusions probably hold for many skilled workers, journeymen, and artisans as well. The economic—and other—benefits of literacy lay elsewhere.

III

The contradictions of literacy's relationship to work may be further explored in a specific work setting. In this section, we focus on one large lumbering concern, the Hawkesbury Lumber Company, located in the rich timberland of the Ottawa River Valley. Hawkesbury was in important ways a typical large-scale nineteenth-century firm. Lumbering was firstly a primary extractive industry, but it also had a large com-

³⁰ Jones, *Outcast London* (Oxford: Oxford University Press, 1971), 82–83; see also E. J. Hobsbawm, "The Tramping Artisan," in his *Labouring Men* (Garden City, N.Y.: Doubleday Anchor, 1967), 41–74. Skilled literate, and organized, workingmen could of course read about economic conditions, and therefore employment opportunities, in the working class press. The development, circulation (including oral transmission of news, group and shop reading aloud), and impact of the Canadian labor press in this period is obviously critical and merits separate and detailed study. See also, E. P. Thompson, *Making*; Webb, *Reader*; J. F. C. Harrison, *The Early Victorians* (New York: Schocken, 1971).

ponent of secondary processing (or, more properly, industrial) functions. Lumbering, certainly capitalist-based, may be viewed as a transitional operation between traditional, seasonal rhythms and the discipline and internal control of the factory that milling would represent. It was a mixture of two historical developments of economic organization. It represents the large work setting, as 795 men were employed, or rehired, during the years 1887 to 1903. The number hired varied from year to year, from a maximum of 208 in 1888 to a low of 6 in 1906. Rather than indicating the introduction of new technology or mechanization, or a drastic response to business conditions, this fluctuation illustrates the stability of the workforce, as most hands retained their positions.³¹

The Hawkesbury Lumber Company is of special interest, for its detailed records of employment contracts have survived. Ledgers of annual contracts were maintained, for 1887–1888 (Hamilton Brothers) and 1889–1903 (Hawkesbury). Exceptional records, they provide for each employee, contract date, occupation, name, wage rates, and a signature or mark—a measure of literacy.³² From these records, the occupational and wage structure and the distribution of literate and illiterate workers may be reconstructed.

The horizontal, or functional, structure of occupations is readily established from these records. As Table 5.2 shows, the largest group of workers were the semiskilled, although the group “millmen” may well have included some skilled workers. Skilled workers constituted the

³¹ The company was begun by George and William Hamilton of Quebec in 1797, and transformed into a joint-stock venture upon its sale to Blackburn, Egan, Robinson, and Thistle in 1889, taking on the new name of Hawkesbury. A few summary statistics suggest the scope: by 1885, 30 million feet of timber were cut annually and milled by 350 hands, by 1909, the annual yield was 50 million feet. Hawkesbury continued to operate until 1936. The records are found in the Archives of the Province of Ontario (Toronto). On lumber industry, see in general, Michael S. Cross, “The Dark Druidical Groves: The Lumber Community and the Commercial Frontier in British North America to 1854,” unpub. Ph.D. Diss., University of Toronto, 1968; Edward McKenna, “Unorganized Labour versus Management: The Strike at the Chaudière Lumber Mills, 1891,” *Histoire Sociale*, 5 (1972), 186–211; and A. R. M. Lower, *The North American Assault on the Canadian Frontier* (Toronto: Ryerson Press, 1938).

On work rhythms, see E. P. Thompson, “Time, Work-Discipline, and Industrial Capitalism,” *Past and Present*, 38 (1967), 56–97; Sidney Pollard, “Factory Discipline in the Industrial Revolution,” *Economic History Review*, 16 (1963), 254–271.

³² On signatures and literacy, see Roger Schofield, “The Measurement of Literacy in Pre-Industrial England,” in *Literacy in Traditional Societies*, ed. Jack Goody (Cambridge: Cambridge University Press, 1968), 311–325; Kenneth A. Lockridge, *Literacy in Colonial New England* (New York: Norton, 1974). Signatures, it should be noted, slightly underestimate the level of reading literacy, as some men would be able to read and not write.

Table 5.2*Occupational Classification and Literacy: Hawkesbury Lumber Company*

	<i>N</i> ^a	Percentage literate		<i>N</i> ^a	Percentage literate
Nonmanual labor (8.5%)			Semiskilled labor (68.8%)		
Foreman	17	88.2	Handyman	21	47.6
Clerk	27	100.0	Teamster	149	36.9
Timekeeper	6	83.3	Courier	1	100.0
Jobber	5	40.0	Lumberman	2	0.0
Lumber inspector	1	100.0	Cook	1	0.0
Contractor	1	100.0	Blockmaker	1	100.0
Total	57	89.5	Fuller	1	100.0
Skilled labor (17.7%)			Housekeeper	1	100.0
Blacksmith	11	81.8	Stableman	3	66.7
Carpenter	19	52.6	Chainer/raker	9	66.7
Cutter	28	64.3	Picket	8	50.0
Millwright	14	57.1	Spareman	3	0.0
Watchman	5	100.0	Barkman	5	40.0
Mechanic	11	90.9	Pileman/piler	69	40.6
Gardener	2	100.0	Stabber	7	71.4
Painter	1	0.0	Slideman	16	31.3
Saddler	6	100.0	Chopper	21	28.6
Sawyer	4	50.0	Loader/striker	6	0.0
Trimmer	1	100.0	Boorman	8	50.0
Wheelwright	1	100.0	Butter	3	0.0
Miller	1	0.0	Millman	99	32.3
Plasterer	1	0.0	Road Cutter	13	23.1
Filer	1	100.0	Logmaker	14	21.4
Edger	6	50.0	Total	462	36.8
Ironworker	7	0.0	Unskilled labor (5.1%)		
Total	119	63.9	Laborer	28	35.7
			Choreman/boy	6	16.7
			Total	34	32.4

^a *N* = 672.

second largest group, twice the number of the nonmanual, three times the unskilled. The diverse processes of work are easily seen from the list, including the extractive and the processing. The largest number of factory jobs (millman, ironworker, mechanic, millwright, etc.)—perhaps one-third of the total—shows the industrial side of operations. Large variations existed in monthly rates of earnings, from \$1.00 (a day's work)

Table 5.3
Rates of Wage and Literacy

Rate/month	<i>N</i> ^a	%	Percentage literate
\$ 1-10	12	1.6	25.0
11-20	298	39.6	43.3
21-30	341	45.4	49.0
31-40	48	6.4	89.6
41-50	40	5.3	72.5
51-60	2	0.3	50.0
61-70	7	0.9	100.0
70+	4	0.5	50.0
Mean	\$24.12		
Median	\$22.53		

^a *N* = 752.

to \$87.00. The mean wage was \$24.00, the median \$22.50, certainly not atypical for the area or the period (Table 5.3).³³

How did literacy intersect with the structure of earnings and occupations? Fifty-two percent of employees were literate and 48% were not, though this measure underestimates the level of reading ability (Table 5.4). This was a high rate of illiteracy for Ontario, Canada, and North America in the last quarter of the century, but it reflects the traditionally high rates of Eastern Ontario and the Province of Quebec, and the French Canadian origins of the greatest number of workers.

As elsewhere, literacy did not always result in higher earnings, a fact supportive of the conclusions of this chapter. Among the lowest paid, at \$10 or less per month, illiterates dominated (Table 5.3). The succeeding wage levels show near parity, however. These ranges, \$21-\$30

Table 5.4
Literacy of Workforce

	<i>N</i> ^a	%
Literate	413	51.9
Illiterate	382	48.1

^a *N* = 795.

³³ For comparative wage data see McKenna, "Labour," 190; *Royal Commission on the Relationships of Labor and Capital* (Ottawa, 1889), Ontario Evidence. A useful compendium of its four volumes has been edited by Gregory Kealey (University of Toronto Press, 1973).

(which encompassed a plurality of the workforce) and \$11–\$20, together comprised over 80% of employees; herein illiterates were hardly disadvantaged. With the exception of the lowest paid (probably casual or part-time), literate workmen fared little better than their illiterate colleagues. Yet there was a limitation on the level of earnings to which the majority of illiterates could aspire, much as tabulations of urban assessed wealth revealed earlier: 92% earned \$30 or less, compared with 70% of literates. Here, however, it was only the top 12% from which illiterates were largely excluded, as they constituted just 20% of those earning \$31 or more each month. Nevertheless, some illiterates did make it to these higher levels (8%). What such men lacked in education or booklearning, they no doubt compensated for with skill, experience, or common sense. Presumably their employers did not find that their illiteracy made them less productive; so their work was rewarded.³⁴

The rewards possible for illiterate workers are also illustrated by their shares in rising wage rates. The contracts in some cases (24% of all) include two rates of remuneration for a workman: the initial wage, used above, and a subsequent higher wage. These men were employed to hold more than one job, their jobs often varying seasonally, showing a versatility of skill if not necessarily a high initial wage or occupational status. Illiterates predominated among men exhibiting this flexibility. One and one-half times as many of them increased earnings in this way as did literate employees, constituting 70% of all increases from \$1–\$10 and 50% of larger ones (Table 5.5). These wage differentials strikingly

Table 5.5
Wage Differentials and Literacy

Change in wages	<i>N</i> ^a	%	Percentage literate
– \$ 1	2	0.3	50.0
0	605	76.1	57.6
+ 1– 5	125	15.7	31.5
6–10	42	5.3	30.9
11–30	20	2.6	50.0

^a *N* = 794.

³⁴ Information on workers' ages not included in these records, could be very revealing in this regard. This analysis may be confirmed and supplemented by an examination of the receipt book of the Madawaska Improvement Company (1888–1903) (Provincial Archives of Ontario). These data also show little disadvantage in wages for illiterates, although the records are less complete than the Hawkesbury material. Obviously, more studies of this kind are needed.

demonstrate the abilities of the uneducated to perform several jobs and to benefit directly in their rewards.

Skills of course relate to occupations, a subject of less significance than economic rewards in attempting to evaluate literacy's role. Occupation is also an inadequate measure of class, status, or skill, but still an important issue. As in the larger society, literacy related directly to occupational status in the Hawkesbury operation. The proportions of the literate increased regularly with occupational class, with large differences separating the nonmanual from the skilled and the skilled from the remainder. These sharp divisions did not, however, carry over into wages, contradicting analyses of social or class structure based solely on occupations, a quite common sociological procedure. In fact, skilled workers were more highly paid than nonmanual ones despite literacy differences, and several semiskilled men attained high salaries. In addition, the obvious factory occupations were not all marked by high levels of literacy. Some illiterates, moreover, were able to achieve higher-ranking occupations; 11% of nonmanual and 36% of skilled workers were unable to sign their names. Blacksmiths, carpenters, cutters, jobbers, millwrights, mechanics, millers, and ironworkers could be illiterate. Though largely disadvantaged in occupation, illiterates held a great variety of jobs and were only slightly disadvantaged in earnings. Their lack of schooling did not significantly restrict them in the pay envelope or pocket.

Ninety-six men, longer-term employees, signed more than one contract. The influence of literacy both on this form of persistence within the firm and on their changes in wage rates advances the argument. Illiterates outnumbered literate workers in this group, and they dominated among those who increased earnings (Table 5.6A). Literacy apparently was not the salient factor; more probably the key was skills and performance about which the ledgers are silent. Illiterates' greater persistence is significant; their wage changes are intriguing. Literacy's importance is seen more in the magnitudes of the changes, as literate workers gained a greater proportion of the larger increases (\$11-\$18), but also in the larger decreases (Table 5.6B). Illiteracy may have placed restraints once more on mobility, but these limits operated in the directions both of rising and of falling, regulating the frequency of changes.

An analysis of literacy's role in a specific work situation, the Hawkesbury Lumber Company, reveals the limits of illiteracy. These operated largely in the occupational dimension, but much less in wages, flexibility, or salary increments. Literacy related to occupation strongly, but not completely, and very little to remuneration. This case study supports and extends the conclusions from the urban inquiry. The Hawkesbury

Table 5.6*Changing Wage Rates: Employees with Two or More Contracts*

	Literate	%	Illiterate	%
A. Same rate	9	20.9	7	13.2
Increasing rate	27	62.8	34	64.2
Decreasing rate	7	16.8	12	22.6
Total ^a	43		53	
B. Increase \$ 1-5	15	55.6	23	66.7
6-10	7	25.9	10	29.4
11-18	5	18.5	1	2.9
Decrease \$ 1-5	4	57.2	9	75.0
6-8	3	42.8	3	25.0

^a *N* = 96.

experience, on the one hand, contradicts the expectations and perceptions of Ryerson and other middle-class school reformers along with one aspect of working class opinion. On the other hand, it provides further support for working class claims that education figured not always or necessarily in work, but could relate more directly to other aspects of life.

IV

In the partly industrial setting of Hawkesbury, literacy did not significantly relate to individual rewards or to job performance; presumably it did not relate to productivity. This section treats the more general question of the connection between education, literacy, and industrialization. Recent research in economic history and development, if far from complete, has begun to contradict the received wisdom and dominant assumption that education is at once central to the process of industrialization and that it must logically precede "take-off into sustained growth." This opinion forms yet another part of the literacy myth. Education and economic development, however, need not be seen as collateral or sequential processes. Productivity and wealth do not necessarily follow from mass literacy, as the histories of Sweden and Scotland, for example, firmly demonstrate. Both achieved mass literacy before the nineteenth century, yet remained desperately poor.

The primary issue is confronted by Roger Schofield, who remarks,

"Today literacy is considered to be a necessary precondition for economic development (and this one may question); but the historian might well ask himself whether this was so in England at the end of the eighteenth century"—or, we might add, North America in the nineteenth. Schofield continues:

The necessity of literacy as a precondition for economic growth is a persistent theme running through many UNESCO publications [and a great many others]. Correlations between measures of industrialization and literacy both in the past and in the present are established in UNESCO *World Illiteracy at Mid-Century* (Paris, 1957), pp. 177-89. These measures are very general and throw no light on the question of why literacy should be considered essential to economic growth.³⁵

In various studies, C. Arnold Anderson and Mary Jean Bowman, in particular, have attempted to demonstrate the ways in which literacy should be considered essential to economic development. Proceeding from the premise that education is one of the few sure roads to economic growth, they find an increasingly common tendency among economists and governments to "justify" education in economic terms (as "human capital"). In 1965, Anderson claimed that "about 40 percent of adult literacy or of primary enrollment [which should be conceptually distinguished] is a threshold for economic development." He added, of course, that the level of education alone is an insufficient condition in a society lacking other prerequisites. Throughout the past decade and a half, their position has been qualified and refined, as they continue to stress the necessity, if not the sufficiency, of a "literacy threshold" for sustained growth or development, a stage to be maintained until a new literacy level, of 70-80% is attained. They have not shown with any precision or direct historical evidence, however, that these thresholds have the significance that is ascribed to them.³⁶

³⁵ Schofield, "Measurement," 312. See also E. Verne, "Literacy"; Introduction, above.

³⁶ Anderson, "Literacy and Schooling on the Development Threshold: Some Historical Cases," in *Education and Economic Development*, ed. Anderson and Bowman (Chicago: Aldine, 1965), 347-362; Bowman and Anderson, "Concerning the Role of Education in Development," in *Old Societies and New States*, ed. Clifford C. Geertz (New York: Free Press, 1963), 247-279; Bowman and Anderson, "Education and Economic Modernization in Historical Perspective," presented to the Fourth International Congress of Economic History, 1968, now published in *Schooling and Society*, ed. Lawrence Stone (Baltimore: Johns Hopkins, 1976), 3-19. The latter contains the best summary of their work. The roots of the human capital school of economists, largely dominated by Gary Becker and Theodore Schultz are found in these approaches. For a useful critical analysis of approaches in the economics of education, see W. G. Bowen, "Assessing the Economic Contribution of Education," in *The Economics of Education*, 1, ed. Mark Blaug (Harmondsworth: Penguin, 1968), 67-100.

Another social scientist has discovered a different explanatory approach to the literacy-and-education-development connection. From his data, David McClelland finds that investment in education at the elementary or literacy level is inadequate and does not correlate positively with growth rates. He argues that:

Primary school attendance has a doubtful relationship to significant improvements, in the labor force or even to literacy itself. That is, the marginal product of a primary school education would seem likely to be low, because skilled artisans may function as well without being literate. Furthermore, primary school attendance is not enough by itself to lift a person to the level of being able to perform jobs characteristic of the middle class.

A strong relationship, however, derives from postprimary education, if the lag-time between training and its effect on the economy is considered. "Education is a long-term investment from the economic point of view," McClelland concludes. This approach seems more sound, for an historical context, though problems do remain, especially when it is applied to the industrial revolution. Nevertheless, distinguishing between levels of training, and critically differentiating literacy from higher and more technical education makes more sense when seeking to explicate and understand education's contribution to economic change; literacy alone should not be seen as representing the level of skills that is required for major development.³⁷

What about the past, and the transition to the factory itself, in the transformation of modes of production and the work-setting for industrial capitalism? In the most general sense, as John Talbott has remarked, "in the first decades of industrialization, the factory system put no premium on even low-level intellectual skills. Whatever relationships existed between widespread literacy and early industrial development must have been quite roundabout."³⁸ "Roundabout" is hardly a precise

³⁷ "Does Education Accelerate Economic Growth?," *Economic Development and Cultural Change*, 14 (1966), 262, 266. See also, M. W. Flinn, "Social Theory and the Industrial Revolution," in *Social Theory and Economic Change*, ed. Burns and Saul (London: Tavistock, 1967), 9-34; David Landes, *The Unbound Prometheus* (Cambridge: Cambridge University Press, 1969).

³⁸ "The History of Education," *Daedalus*, 100 (1971), 141. For contrary views, see Webb, *Reader*, 15, *passim*; Bowman and Anderson, "Education." See also D. J. Treiman, "Industrialization and Social Stratification," in *Social Stratification*, ed. E. C. Laumann (Indianapolis: Bobbs Merrill, 1970), 207-234. The most recent restatement of the normative view may be found in E. G. West, "Literacy and the Industrial Revolution," *Economic History Review*, 31 (1978), 369-383. I find it no more persuasive than other versions.

description, but it is an improvement on theories of linear, deterministic causal connections. We can improve upon that description, I believe.

Firstly, contradicting those who argue for the productive value of educated and literate labor's skills, the relationship in the first, English Industrial Revolution was less than roundabout. Early industrialization was disruptive of education, and literacy rates fell or stagnated as a result. There was little demand for new or increased labor skills, and more importantly, the demand for child labor, in England and elsewhere, greatly reduced the chances for a lower-class child to attend school. Factory schools were, on the whole, rare, ineffectual, and very irregularly attended. Secondary education was unheard of for the children of the working class.³⁹

The consequence, Roger Schofield and Michael Sanderson have shown, was reflected directly in the literacy rates of late eighteenth- and early nineteenth-century England. Sanderson found that "the English Industrial Revolution cannot be seen as one nourished by rising educational standards at least at the elementary level," and from more recent research comes broader, comparative support for his conclusions.⁴⁰ The stagnation or decline in literacy, which varied regionally, did not impede the upsurge of economic growth, because the nature of this industrialization made very low literacy demands on the educational system. Or, as Schofield explains:

Thus, insofar as economic growth in this period entailed the acquisition of a large number of practical skills by a growing proportion of the population, developments in literacy and education were probably largely irrelevant to it. And, insofar as economic growth resulted from the increased productivity of labor brought about the shift from domestic to factory production, literacy

³⁹ Michael Sanderson, "Education and the Factory in Industrial Lancashire, 1780-1840," *Economic History Review*, 20 (1967), 266, "Social Change and Elementary Education in Industrial Lancashire, 1780-1840," *Northern History*, 3 (1968), 131-154. David Levine, in *Family Formation in An Age of Nascent Capitalism* (New York: Academic Press, 1977), 28ff and in unpublished work, presents important additional evidence of this effect of early industrialization. The labor press cited above made many of the same points, as did both the commissioners and the witnesses in *The Royal Commission on the Relations of Labour and Capital*.

⁴⁰ "Literacy and Social Mobility in the Industrial Revolution," *Past and Present*, 56 (1972), 75, 102. See the critique of this paper by Thomas Laqueur, *ibid.*, 64 (1974), 96-107 and Sanderson's reply, 108-112; Laqueur's *Religion and Respectability* (New Haven: Yale University Press, 1976), "Working-Class Demand and the Growth of English Elementary Education," in *Schooling and Society*, ed. Stone, 192-205. In support of Sanderson's interpretation, see Levine, *Family Formation*; Richard Johnson, "Notes"; W. B. Stephens, "Illiteracy and Schooling in the Provincial Towns, 1640-1870," in *Urban Education in the 19th Century*, ed. David Reeder (London: Taylor and Francis, 1977), 27-48, among Stephens' studies.

and education were also probably largely irrelevant for many of the new industrial occupations recruited a mainly illiterate work force. . . .

"Knack," as Sanderson terms it, and new modes of organizing labor in industrial production were of greater importance than book-learning or literacy skills in the process of industrialization.

In the historical case of English industrialization, there are firm grounds on which to part company with those who must relate mass education directly to economic development. England had reached the 40% "threshold" of literacy by 1750 (at least for males), and it remains for researchers to isolate an exception to that rule of thumb for economic development. Stephens, for one, finds that literacy levels were "manifestly related to some extent to the economic function" of urban as well as industrial places. Throughout England, towns that experienced industrial development suffered declining literacy levels, as did other, large and growing centers. In France, with later and slower industrial development, the relationship with literacy and schooling, in the Département du Nord, paralleled the English case. Furet and Ozouf conclude that "not only does modern industrialization not create a demand for skilled labour, it also tends to depress urban literacy rates." Peter Flora, finally, in a large-scale macroanalysis of literacy and modernization in 94 countries from 1850–1965, discovers that contrary to the typical assumptions, no direct connection existed between literacy and industrialization (or urbanization). Both the linear causal theories and threshold-level notions seem so vague and overly simplistic, as well as so empirically contradictory, as to be meaningless. The relationship of higher levels of education to development requires further detailed study, although postprimary education played no large role at this early stage (unless, however, it contributed to the development of inventors, technological innovators, and entrepreneurs—a very different matter from these traditionally assumed connections with the main labor force.) As Schofield aptly expressed it, "For England, at least [and we may now add "elsewhere"], the usual causal relationships between literacy and economic growth might probably be reversed. In this alternative perspective the reduction in illiteracy in nineteenth-century England would appear more as a cultural change brought about by economic growth than as the cause of growth." ⁴¹ Reversing traditional explanations is critically

⁴¹ "Dimensions of Illiteracy, 1750–1850," *Explorations in Economic History*, 10 (1973), 452–453, 454; Stephens, "Illiteracy," 32. See Francois Furet and Jacques Ozouf, "Literacy and Industrialization," *Journal of European Economic History*, 5 (1976), 26, 5–44, for France, and their *Lire et écrire* (Paris: Éditions de Minuit, 1977); Peter Flora, "Historical Processes of Social Mobilization," in *Building States and Nations*,

important in disentangling these presumed relationships, and in understanding the historical processes of change and development. Attention to the chronological sequence of developments—in industrialization, economic growth, literacy, and education—(as is suggested presently) introduces a conceptualization that fits the historical contexts.

If not education as preparation for productive, skilled labor, then what? We must return to the alternative perspective on skills and literacy elaborated above. Sidney Pollard and Edward Thompson, in path-breaking analyses, have shown that the laboring population had to be trained for factory work and taught industrial habits, rules, and rhythms. Traditional social habits and customs did not fit the new patterns and requirements of industrial life; they had to be discredited and replaced with new, "modern" forms of behavior, intended to transform, in part, the culture of the working class. Literacy could be far from central in the creation of an industrial (or also commercial, urban) workforce, depending on time and circumstance, although its potential for assimilation was soon recognized. As Pollard illustrates, it was not necessarily the better worker but rather the stable one who was worth more to manufacturers; "often, indeed, the skilled apprenticed man was at a discount, because of the working habits acquired before entering a factory."⁴² The problem of course was one of discipline, as factory-owners experienced great difficulties in training men to "renounce their desultory habits of work, and identify themselves with the unvarying regularity of the complex automation." Discipline—and new standards of behavior—were required to produce goods on time. To orient the factory hands to these routines, rules became the norm: "Work rules, formalized, impersonal and *occasionally printed*, were symbolic of the new industrial relationships [emphasis added]." No primacy was to be accorded literacy (here and at first) in solving the most difficult of industrial capitalism's conundrums.

ed. S. N. Eisenstadt and S. Rokkan (Beverly Hills: Sage, 1973), I, 213–258, for additional cross-cultural, aggregative evidence in support of the argument; Verne, "Literacy."

⁴² Pollard, "Factory Discipline," 225. See also, his *Genesis of Modern Management* (Harmondsworth: Penguin, 1968), esp. Ch. 5; Thompson, "Time, Work-Discipline"; Keith Thomas, "Work and Leisure in Pre-Industrial Societies," *Past and Present*, 29 (1964); Robert Malcolmson, *Popular Recreations in English Society, 1700–1850* (Cambridge: Cambridge University Press, 1973); Herbert Gutman, "Work, Culture, and Society in Industrializing America, 1815–1919," *American Historical Review*, 78 (1973), 531–588; J. F. C. Harrison, *Victorians*; Field, "Reform"; Johnson, "Notes"; Stephen Marglin, "What Do Bosses Do?," *Review of Radical Political Economics*, 6 (1974), 60–112, 7 (1975), 20–38; Inkeles and Smith, *Modern*, Ch. 11.

To "educate" the workers was necessary. But it was not an education in reading and writing; rather it was "the need to educate the first generation of factory workers to a new factory discipline, [part of] the widespread belief in human perfectability . . . but one of their consequences was the preoccupation with the character and morals of the working class which are so marked a feature of the early stages of industrialization."⁴³ Toward this end—the reshaping of character, behavior, morality, and culture—factory owners and other capitalists joined with social reformers and school promoters (as in North America) seeking alternative, more effective and efficient approaches to socialization. Increasingly, we have seen, they turned to public schooling, literacy transmission, and mass institutions; the timing of the processes made for crucial differences in economic development on the two sides of the Atlantic.

Thompson highlights the transition, focusing more closely on the importance of precise and mechanically maintained clock-time in the shift to the factory. Regardless of the need for literacy to tell time, "the bell would also remind men of [time's] passing. . . . Sound served better than sight, especially in the growing manufacturing districts," as the first generation was taught the new routine by its masters. The schools could also contribute to this training; they could be useful in inculcating "time-thrift," among other industrial habits, notwithstanding that they might give virtually no attention to specific job skills. Charity schools, for example, were praised for teaching industry, frugality, order, regularity, and punctuality. By the time children reached six or seven years of age, they should have been "habituated, not to say naturalized to Labour and Fatigue;" the training of children of the poor was to begin at age four. In the attempt to establish the hegemony of the school, instruction intervened in working-class culture, to limit its reproduction in the interests of social order, properly trained labor, and normatively socialized citizens. From charity and monitorial schools to "reformed," less coercive methods in the 1830s, children were taught the moral bases. Kept constantly occupied, their ceaseless activity in the school was structured by rules and discipline in the effort to replace "that unproductive activity called play," as new forms of behavior and conduct represented the approved and rewarded standard. The parallels between the rules of the school and the rules of the factory were not overlooked by manufacturers or educators either: "Once within the gate,

⁴³ Richard Arkwright, quoted in Pollard, "Factory Discipline," 258, 258 (emphasis added), 268; Johnson, "Notes," provides additional examples.

the child entered the new universe of disciplined time. . . . Once in attendance, they were under military rule."⁴⁴ Discipline was modified with time, especially with the further articulation of the moral bases of literacy; both the school and the factory became important agents for productivity and social change, in reciprocal yet subtle balance.

In England, the value of formal education was increasingly recognized. Literacy, it was grasped, could ease the transition and assimilation of the working class and the poor to industrial and "modern" social habits, if provided in carefully structured institutions. To destroy traditional attitudes, culture, and habits of work was far from an easy or simple task, as many researchers have discovered. Nor was it accomplished in one generation or without great conflict. "Coercion," John Harrison summarizes, "had to be applied in various forms, from strict factory rules to the inculcation [in schools] of precepts of self-discipline." The latter of course were more effective and efficient in dealing with an increasing population at a time of great change; it also permitted an attempt at the reformation of adults through the inculcation of morality and self-restraints in the children. As a result, the process of assimilation was closely tied to the spread of literacy.⁴⁵ Literacy's importance can not be understood in isolation, or in terms of self-advancement or skills; rather, its significance lies in its relation to the transmission of morals, discipline, and social values. As R. P. Dore concluded for a different culture, Tokugawa, Japan:

But what does widespread literacy do for a developing country? At the very least it constitutes a training in being trained. The man who has in childhood submitted to some processes of disciplined and conscious learning is more likely to respond to further training, be it in a conscript army, in a factory, or at lectures arranged by his village agricultural association.⁴⁶

Training in being trained, as Dore aptly puts it, is the crucial job-preparation and a problem for industrialism. The English example is instructive in this respect, yet the North American experience differed

⁴⁴ Thompson, "Time, Work-Discipline," 64, 84-85; Johnson, "Notes," 46-48, *passim*. See, for example, Allan Greer, "The Sunday Schools of Upper Canada," *Ontario History* 67 (1975), 169-184. See also, Bowles and Gintis, *Schooling*; Gintis, "Education"; Field, "Reform"; Inkeles and Smith, *Modern*.

⁴⁵ Harrison, *Victorians*, 135-136; Johnson, "Notes"; Phillip McCann, ed., *Popular Education and Socialization in the Nineteenth Century* (London: Methuen, 1977); A. P. Donajgrodzki, ed., *Social Control in Nineteenth Century Britain* (London: Croom Helm, 1977).

⁴⁶ *Education in Tokugawa Japan* (London: Routledge, Kegan Paul, 1967), 292.

greatly in timing and in the sequence of change. England industrialized well before literacy reached universal proportions (not very much beyond a 40% "threshold"); formal education was not an integral part of the origins of her transition, and there is little role for a lag-time for educational investments in *early* industrialization. The transition to the factory and industrial capitalism was far from easy—marked by intense conflict, violence, riots, strikes, Luddism, Chartism. Mass schooling tended to follow this first set of changes; its impact was felt later.

On the contrary, North American development, particularly Canadian industrialization, but also that in the United States, came comparatively much later. Importantly, it followed the attainment of near-universal levels of literacy (among the white population) and the establishment and expansion of public systems for mass elementary education (though not much secondary schooling). As the result of the timing—and the linkages on several levels—between changes that were not merely chronologically coincidental, literacy and schooling were intimately related to social and economic development. Alexander Field's Massachusetts case study provides the best analysis available thus far, although it is not flawless. In this, the earliest North American industrial revolution, Field shows that manufacturers actively supported and participated in educational reform and expansion in efforts to resolve the social tensions arising from change and to secure a properly socialized work force, and not a more highly skilled one. Their reasons for promoting education were social as well as economic (the two were inextricably linked) in their response to the perceived need to confront the difficulties of the transformation. To protect society and property, as well as to organize, control, and increase production, they sought—with the school promoters themselves—more moral, orderly, disciplined, deferential, and contented workers: the expected result of the hegemony of the moral economy of literacy. Schooling of course also contributed more broadly to the socialization and formation of the urban, but nonindustrial workforce. In much of North America, moreover, education *preceded* industrialism. While other detailed case studies are urgently required, widely scattered evidence, from educational, working-class, and economic history illustrates the importance of the earlier reform of education in North America and its impact on socioeconomic development.⁴⁷

⁴⁷ See, in support of this approach, the important recent studies of Field, "Reform"; Gutman, "Work"; Marglin, "Bosses"; Katz, "Origins of Public Education"; Daniel T. Rodgers, "Tradition, Modernity, and the American Worker," *Journal of Interdisciplinary History*, 7 (1977), 655–681; Bowles and Gintis, *Schooling*. For one representative, contemporary view, see John Eaton, *Illiteracy*.

Therefore, I advance the hypothesis that the transition to both commercial and industrial capitalism in North America was a smoother one than in England, and perhaps elsewhere.⁴⁸ Without ignoring or diminishing the significance of conflict and resistance, which certainly were present, their potential may well have been reduced as one direct consequence of the comparatively earlier and more extensive educational development and its intimate reciprocal relationship to economic change and industrialization. Schooling, in this formulation, paved the way for economic transformation, pointing to the function of lag-time at the elementary level. Industrial development apparently did not have the same destructive impact on education either. We also know that North American educational reformers and manufacturers were aware of the problems taking place abroad, and without assigning the conspiratorial or omniscient roles such as would belie their very real confusion and fears, we can allow that they benefitted from the English experience and from their not having to face the "first" Industrial Revolution.⁴⁹ This was one key purpose of the education that Ryerson and other middle-class reformers promoted, as they sought to school the masses in the cause of social and national development and greater productivity.

To do so, it was essential to break preindustrial work habits, to "Canadianize" or "Americanize" immigrants and workers, removing them from traditional origins and habits. The transmission of literacy in the interest of cognitive skills was of secondary importance. Literacy, though in its contribution to proper education and its relationship to noncognitive training was central in schooling. Print literacy had important socializing functions, both direct and indirect ones; literacy training, for example, served to regularize and discipline behavior. So, in North America, education could replace some of the coercion of English labor to strict factory rules and internalized self-discipline. In the long run, education was more effective and efficient than overt coercion; certainly, it was less disruptive. The provision of mass schooling; the working class' acceptance of it, though a questioning one; and universal, public education all served this direction: promoting discipline, morality, and the "training in being trained" that mattered most in the creation and

⁴⁸ At this stage of research, this contention must remain largely hypothetical. We know all too little about the transition in Canada, and comparative studies of Anglo-America are sadly lacking. Recent work by Charles Tilly and Edward Shorter on strikes in France suggests one approach, though an exclusive focus on strike action would obscure many issues.

⁴⁹ The writings of Ryerson and Mann, with their frequent European references, make this clear. See also the important discussion by Thomas Bender, *An Urban Vision: Ideas and Institutions in Nineteenth-Century America* (Lexington: University of Kentucky Press, 1975).

preparation of a modern industrial and urban work force. These were the purposes of the school—and one use of literacy.⁵⁰

⁵⁰ This is, of course, the mere sketch of a theory, for many questions surrounding the actual experience of schooling remain unanswered: the lines of future research should be clear, however. There is, for example, the problem of irregular attendance which was widespread. Did this militate against the schools' "success"? Quite simply we do not yet know how much exposure to the routine and the message of schools was required for sufficient training. The role of non-English-speaking immigrants must be considered as well. For a fascinating argument on a closely related theme, that of the sanitation movement, see Richard L. Schoenwald, "Training Urban Man," in *The Victorian City*, ed. H. J. Dyos and Michael Wolff (London: Routledge, Kegan Paul, 1973), 669-692.

The presumed effects of literacy and "alphabetization" on personality and the regularization and standardization of behavior may be important in this regard. See below, but see also the speculations of Marshall McLuhan, *The Gutenberg Galaxy* (Toronto: University of Toronto Press, 1962), *Understanding Media* (New York: McGraw-Hill, 1964); G. H. Bantock, *The Implications of Literacy* (Leicester: Leicester University Press, 1966); Jack Goody and Ian Watt, "The Consequences of Literacy," in *Literacy in Traditional Societies*, ed. Goody, 27-68; Goody, *The Domestication of the Savage Mind* (Cambridge: Cambridge University Press, 1977). There is also a large but very inconclusive psychological literature in this area. Among recent work, the most interesting include the studies of Michael Cole, Sylvia Scribner, and Patricia F. Greenfield (cited in Ch. 6, Note 34).

The experience of Quebec in the nineteenth century illustrates vividly the problems of the transition in a society without mass literacy; see *Royal Commission on the Relation of Labor and Capital*, Quebec Evidence. See also Michael Bliss' interesting attempts to explain manufacturers' lack of understanding of these problems: "Employers, as representative as anyone else of prevailing social mores, were often confused and puzzled when faced with insistence that the familiar rules of the game should not be changed, and not in their favour," "A Living Profit: Studies in the Social History of Canadian Business, 1883-1911," unpub. Ph.D. Diss., University of Toronto, 1972; 137, 148, 157; published as *A Living Profit* (Toronto: McClelland and Stewart, 1974), Ch. 3.