

# Priorities and Resources in Adult Education: The Montreal Mechanics' Institute (1828-1843)

## Abstract

*This study explores a pioneer experiment in popular adult education in Canada. It examines the explicit and implicit priorities of Montreal Mechanics' Institute between 1828 and 1843, and the resources mustered to realize them. The project's viability is discussed in relation to contemporary social, economic, and political conditions. This highlights some of the multiple conflicts inherent in a prescriptive philosophy of adult education even before the advent of a distinct working class consciousness.*

Today, only two of the hundreds of mechanics' institutes founded to provide adult education in North America appear to remain in operation – those of Montreal and San Francisco (Keane, 1984). This paper explores the explicit and implicit priorities established by the former, and the human and material resources mustered to realize these priorities in the formative fifteen years prior to attempts at public recognition. First, the Montreal foundation is placed in the context of the international "useful knowledge" movement, and then in the context of local, social, and economic conditions. Next, the institute's original promoters, their priorities, and their resources are explored. After noting the interregnum highlighted by the 1837 Rebellion, the new administration's promoters, priorities, and resources are similarly examined. Finally, the validity of this early experiment in adult education is considered from the perspective of goal attainment.

### *Useful knowledge*

"Useful knowledge" was popularized in Britain and North America from the 1820s. It was conceived largely as a form of adult continuing

education in those fast-developing sciences assumed to have a broad cultural and vocational application. It was deemed to be of particular value to skilled workers educated in the apprenticeship system. While such folk heroes of this system as Benjamin Franklin and James Watt had benefited from independent study, it was felt that some institutionalized form of adult education was needed to disseminate the new knowledge more widely. Accordingly, the traditional (middle class) model of a voluntary society was utilized, and an international network of agencies was developed to serve this new student body.

These agencies, usually termed **mechanics' institutes**, reflected the generic term for skilled workers in the male-dominated technical trades. The institutes showed a surprising degree of similarity in their priorities, and in the kinds of resources they endeavored to obtain, whether they were located in Scotland or in California. They were dedicated to the proposition that the power and wealth of the Industrial Revolution rendered possible unlimited progress for all, but more particularly for those who chose to benefit from recent advances in scientific and technical knowledge. Disdaining liberal and classical education which was considered as suited more to the elite of an outmoded, hierarchical, agrarian society, they urged the merits of those sciences which had applicability to the workplace. Such advocacy seemed especially relevant in the New World, where isolation, novelty, change, and opportunity put a premium on innovation. It also proved sufficiently flexible to incorporate a wide range of subjects, although specifically excluding controversial politics, economics, and religion, and implicitly excluding recreational and leisure time interests.

The curriculum philosophy was a prescriptive one, formed largely by middle class sponsors, and was marketed enthusiastically, often in the face of Tory opposition or workers' diffidence. "Useful knowledge" constituted a middle ground in adult education, broader than the elementary religious and moral education acceptable to some Tories, yet narrower than the education for social, economic, and political change sought by some working class leaders. Its promoters sought to marshal sufficient resources to channel an undoubted interest in the "marvels of science" into avenues of advancement that would not be disruptive of the status quo. As the classical world had valued knowledge for its own sake, and the medieval world for its contribution toward salvation, the perception now was that of Francis Bacon or René Descartes – that "knowledge is power."

### *Contemporary Montreal*

Montreal, like San Francisco, was facing substantial population growth and industrial development at the time its mechanics' institute was founded. In both cities, the new colonists differed from the host culture in

being largely English-speaking. Demobilized soldiers, sailors, and marines came to Montreal in large numbers after the ending of the Napoleonic Wars in 1815, followed by settlers fleeing economic hardships, in the 1830s, and the Irish famine of the 1840s. Montreal's population of some 18,000 in 1821 grew to over 91,000 four decades later (Cooper, 1969). The newcomers varied from the skilled and prosperous to the destitute and disease-ridden, and their influx led to racial and religious dissension. In 1828, when the institute was established, a prosperity long based on the fur trade had given place to a more diversified economy, directed by a powerful and prosperous merchant class, who sought to retain for Montreal the economic, if not the political, primacy of the Canadas, by deepening the channel to Quebec to render Montreal an ocean terminal. Needed harbor improvements were however delayed until 1830, when the merchants secured the appointment of harbour commissioners to direct the work. Similarly, it was not until 1833 that property owners replaced the appointed justices of the peace with their elected city council.

In the twenties and thirties, traditional commercial employments were supplemented by a growing brewing and distilling industry, and by the development of small industrial establishments, particularly in the largely English-speaking ward of St. Ann. John Molson Sr., who in 1783 entered the city's brewing business, had in 1809 commissioned the first steamboat to be built in Canada, and in 1821 introduced a steam engine into his brewery. It "performed erratically, but it was a giant step into the industrial age" (Woods, 1983, p. 72). While this founder of today's corporate giant had found it necessary to visit the inventors, James Watt, in England, and Robert Fulton, in New York, his work was nevertheless facilitated by Montreal already possessing a "surprisingly sophisticated metalworking industry" (p. 34). Thereafter, marine engineering, boosted by the adoption of the steam engine, developed alongside the manufacture of carriages, soap and candles, drugs and paint, rope, newspaper type, shoes, and clothing.

The influential Scottish entrepreneurs were complemented by increasing numbers of New Englanders, although French-Canadian participation was not to be significant until the end of the period covered by this study. One theory attributes the latter circumstance to a *mentalité* inhibiting entrepreneurial activity. Another theory suggests that "they lacked technical competence, or because their capital resources were insufficient" at a time when owners were "still the master craftsman, engineer, works manager, and possibly even chief salesman" in these small plants (Ekirch, 1951, pp. 94-95; Tulchinsky, 1977, pp. 204, 229; Yves, 1969, pp. 426-430). By 1830, Montreal was credited with having nearly five hundred industrial plants and some thirteen hundred employees, many highly skilled and representing the classic participants in mechanics' institutes (Bruchesi, 1943).

*Initial promoters and priorities*

The founders of the Montreal Mechanics' Institute who met on November 21, 1828, represented the French-speaking and the English-speaking population, the establishment and the forces of change. The meeting was chaired by the Rev. Henry Esson, a Presbyterian minister, educated at Marischal College, Aberdeen, Scotland, who later joined the faculty of Knox College, Toronto (Campbell, 1887). His St. Gabriel Street church was the ideological home of many of the city's Presbyterian merchants, and his personal contributions included the founding of a local school, the Montreal Academical Institution. The promotion of "useful knowledge" was to be undertaken frequently by such nonconformist ministers, particularly the Unitarians, although its secular context was more likely to deter Anglican and Catholic clergy.

Others who joined the first governing body included Louis Gogy, Swiss-born sheriff of Montreal, as president; Louis J. Papineau, a seminary educated seigneur of Montebello and French-Canadian speaker of the Assembly, as a vice-president; John Molson Sr., noted earlier, as a vice-president; Horatio Gates, Massachusetts-born wholesale staple merchant and fellow director with Molson of the Bank of Montreal (1817); and Sir James Kempt, governor of Quebec, as a patron. Support thus ranged from the courtly provincial governor to Papineau, one of his chief political opponents, from the scholarly Esson to the hard-headed bankers and business people, and embraced those of Presbyterian, Anglican, and Catholic faiths. For an institute credited with being the first in present day Canada, the broad support seemed a propitious omen in that era of uneasy relationships.

Their explicit priorities were expressed as being "to instruct the members in the various branches of science and useful knowledge" (1). These were intended to be realized with a program of lectures, classes, a library, a museum, an experimental workshop, and a laboratory. Subjects identified were natural and experimental philosophy, practical mechanics, astronomy, chemistry, mathematics, architecture, navigation, geometry, trigonometry, ancient and modern languages, civil history, political economy, philosophy of the human mind, and the arts. Reference to the "ancient languages" and "the arts" suggests a liberal interpretation of "useful knowledge," although one suspects that "political economy" would be interpreted from the prevailing middle class standpoint of a community of interests between employer and employee. New members were to be admitted only after being proposed at one meeting and balloted for at the next one, and the socially acceptable goals of "useful knowledge" were presumed to confer on them a degree of prestige or status. The target audience was the predominantly English-speaking skilled workers, able to afford an annual \$2 membership fee.

The priorities proved to be relatively attractive. Some two hundred members were soon enrolled. These appear to have been largely English-speaking and the language of instruction was English. However, alongside the names Allison, Clarke, Scott, and Stevenson, one also finds Bouderau, Cuvillier, Lalanne, and Lapensée. Indeed, the French-Canadian merchant, François Antoine Larocque, also joined the administration.

In addition to the merchants, physicians, and clergy, who tended to be officeholders, a diversity of occupations were represented. These included apprentice, architect, army officer, blacksmith, bookkeeper, botanist, builder, 'chymist' (pharmacist), clerk of works, draper, engineer, engraver, gentleman, hatter, innkeeper, joiner, law student, linendraper, mason, miller, plasterer, plumber, postman, shoemaker, surveyor, teacher, tobacconist, victualler, and writer. Such occupational information has to be treated with some reserve for while apprentices are identified separately, no distinction is noted between masters/employers and journeymen/employees. However, that was the era of the small artisan shop in Montreal, of the master, his handful of qualified journeymen, and a number of apprentices learning their trades. Relations were usually close and personal, and assumed both a community of interest and previously undreamt of opportunities for advancement. The promoters, the priorities, and the membership were thus alike in their breadth, although some constraints have been identified.

### *Initial resources*

Translating the priorities into a viable program involved the practical question of resources. This was an especially critical question for this voluntary body. Its members could not be expected to muster resources comparable to the city's earlier (middle class) scientific bodies – the Medical Institute (1823) and the Natural History Society (1827). Indeed, hindsight suggests that Montreal, with a population of under 30,000 by 1830, was below the optimum needed to sustain a full taxonomy of scientific societies, even with some proffered cooperation (Hendrickson, 1973; Greene, 1976). It was however the age of innovation, of the gifted amateur, of the dedicated volunteer, and of unbridled optimism. In this heyday of voluntarism, it was tacitly assumed that members and supporters would be able and willing to volunteer for the teaching and administrative roles, and to serve on committees as required. The institute's inaugural meeting had also specifically called upon members for "donations of money, books, specimens, implements, models, apparatus." Beyond the optimistic assumption that adequate human and material resources existed in Montreal and would be attracted to this venture, it was apparent that the promoters began with only a vague idea of what was actually needed. There were indeed few sources of such information in 1828, for this recent international movement had been propelled more by conviction and emulation than by

research. Information was thus limited to descriptive newspaper accounts or members' possible knowledge of other foundations.

An international network reflective of this pervasive scientific culture was indeed in the making (Keane, 1985), but local social contexts quickly influenced resource availability in that inevitably they influenced priorities. Even when funds became available, some instructional materials proved difficult to obtain, although general literature was regularly imported for sale in Montreal, and agents existed for more specialized periodicals (2). When the substantial sum of £44.2s.4d. was amassed for the purchase of books and scientific apparatus in 1834, it proved necessary to make the purchase in London, England – an undertaking facilitated by the fortuitous visit of one of the members (3). Even in Britain, home of the Industrial Revolution, this burgeoning market had not been addressed seriously until the foundation of the **Society For the Diffusion of Useful Knowledge**, in London in 1826, and its affiliate in Boston two years later. Thereafter, a period of trial and error ensued as a body of gifted writers sought to produce reading materials suited to this new reading public. It was in the context of such unforeseen difficulties that the Montreal administration by 1835 amassed a collection of specimens, models, newspapers, and some five hundred journals and books.

### *Lectures and classes*

No difficulty was encountered in quickly mounting a modest lecture program on such subjects as architecture, astronomy, limestone, and scientific irrigation. By 1833, the institute even offered a lecture course on political economy – from the mundane "vote of thanks" tendered the lecturer, and his "suitable reply," one assumes it represented orthodox views. As early as 1829, it had even been proposed to supplement the ad hoc voluntary lectures with regular courses recognized by the payment of small fees (4). A provincial grant, facilitated by Papineau, encouraged this trend, and the lectures seem to have proved popular, entertaining, stimulating, and even profitable. However, it was soon realized that the relative shortage of people able and willing to teach courses was compounded by a shortage of suitable scientific apparatus, models, and texts. Much depended on the services of largely self-educated amateur scientists, medical practitioners, or technical officers of the garrison, and on their private resource collections. These prized human and material resources were in great demand although membership of the three scientific societies sometimes overlapped, as happened among physicians or those involved in other aspects of public service. Thus Dr. Andrew Holmes was an early member of all three bodies, and went on to become Dean of Medicine at McGill in 1854.

The question of resources was further highlighted when formal class instruction in drawing was instituted in 1833. It was realized gradually that a discursive lecture program was ill-suited to facilitate technical competence among those who possessed limited formal schooling. However, a sustained and intensive class program of four 2-hour sessions per week made onerous demands on the administration, the instructors, and the students. Rather than diverting proportionately more resources to the project, the administration allowed a teacher to hold his day school in the institute in return for donating his evenings to the institute class. The venture proved short-lived, although in 1835 there was again mention of the desirability of class instruction. This time fifteen apprentices showed interest in enrolling for a mathematics course. Yet again, the administration seemed more intent on promoting a popular lecture program than in coming to grips with the substantial educational changes their priorities entailed.

### *Implicit priorities*

It was in respect of priorities not stated in the constitution or committee minutes that the administration's community of interests between masters/employers and journeymen/employees was soon questioned by events outside the institute, as was the viability of involvement of the French-speaking population. Even as Montreal property owners secured control of their municipal government, local craft unions were developing, as representative of the skilled workers. These had formulated wage rates and apprentice agreements among the shoemakers and tailors in 1830, the printers and carpenters in 1833, and the bakers and firefighters in 1834. Conflict resulted in 1834 when the journeymen carpenters and joiners of the **Mechanics' Protecting Society** sought to lower their eleven-hour working day. Their recently enfranchised employers offered unyielding opposition to men characterized as "dangerous to the peace and safety of good citizens" (Forsey, 1982, ch. 2; Lipton, 1966; Logan, 1948; and Note 5). Similar confrontations occurred elsewhere, with such proclaimed liberal reformers as William Lyon Mackenzie urging striking Toronto printers to study economics instead of fomenting social divisions. For those who were denied the vote and were lectured on orthodox middle class views on economics, the possibilities of "useful knowledge" enhancing their opportunities must have seemed tenuous.

Potential and actual French-speaking members might also have been deterred by the institute's English-speaking milieu, which was influenced by local Presbyterian Scottish and New England business interests. Some Lower Canadian reformers indeed viewed the promise of improved technical competence as a possible escape from drudgery, ignorance, and isolation in a frontier society. They shared also an opposition to banks and land companies with Upper Canadian reformers.

Other Lower Canadian reformers, however, viewed technical progress as a possible threat to their cultural identity. They opposed further immigration and government support of such industrial and commercial development as canal building, while seeking retention of feudal land ownership. Papineau, who retained the support of most French-Canadians, proved a somewhat incongruous advocate of the institute in view of his social conservatism. Although his subscriptions were in arrears, he served on the institute's governing body, promised and delivered government support, and urged the members to develop a role as technical innovators. In 1830, he even proposed a specific research project as worthy of their efforts – the invention of "a method to warm houses and public buildings in Canada upon a cheaper, cleaner, and . . . better plan than the present mode with stoves" (6). Papineau's support, influential though it was, did not lead to any influx of French-speaking enrollments. Doubtless, few bilingual French-Canadian skilled workers were disposed to challenge the prevailing political, economic, and religious animosities that membership might have entailed.

The research proposed by Papineau raised questions of priority. Among the institute's unrealized objectives was the establishment of "an experimental workshop and laboratory" – a concern reinforced in 1835 by a proposal to award silver medals for inventions. However, transforming the institute from an information system into a research body highlighted issues both of practicality and of common interests. A prevailing conviction that skilled workers needed only the resources of mechanics' institutes in order to make significant research contributions had yet to be discounted. The resources of the Montreal institute were not in any case comparable with those of the Royal Institution, London, or the Franklin Institute, Philadelphia, where scientific and technical research was flowering. More significantly, as those bodies attracted increased middle class business and professional participation, skilled worker involvement almost disappeared. This was not simply from the latter's perceived inability to participate, nor was it from a lack of interest in innovation. (The Montreal members had already demonstrated an interest in new processes, machines, techniques, and implements.) Rather, in the absence of effective patent protection of innovations, the skilled worker lacked a stimulus to participate in the explicit priority of the "common good." Instead, a now restive work force scented implicit priorities, exploitive of interests long protected by traditional craft secrecy and apprenticeship regulations.

#### *Interregnum: 1835-1840*

After 1835, the institute lapsed into suspended animation. Its prized resources remained out of circulation until its rebirth in 1840. While the highlight of this period was the Montreal Rebellion of November 6, 1837,



there were also outbreaks of cholera and typhoid, an economic recession, and signs of independent working class initiatives. As early as 1834, some Montreal workers were fired for daring "to entertain a different set of political opinions" from those to whom they gave their "day's labor in exchange for a dollar" (Lipton, 1966, p. 10). In the same year, the craft unions had supported Papineau's famous 92 resolutions on responsible government, and witnessed the reformers' election success in the house of assembly. In such a heady climate, the ideology of "useful knowledge" must have seemed to many as becoming increasingly irrelevant to the major issues of the day. A Tory reaction, the proclamation of martial law, and the flight of Papineau and other reformers to the United States, ended this chapter in Montreal's development. Change came in 1840 when the economy was again buoyant, a board of trade was organized, and immigration was expanding the scope, resources, and needs of the city.

#### *New promoters and their priorities*

On February 7, 1840, a public meeting proposed the re-establishment of a mechanics' institute, and four days later the venture was launched. The impetus was ascribed to "several gentlemen" who obtained "the countenance and support of many of the most influential of our citizens" (7). The Irish-born publisher, John Lovell, spoke of the benefits already dispensed by such institutes elsewhere. John Redpath, a Scottish-born city alderman (1840-1843) involved in banking, mining, shipping, and canal building, was elected president. Benjamin Holmes, cashier of the Bank of Montreal, was elected vice-president, and Dr. Joseph Hall, a local physician, was appointed corresponding secretary. George Moffatt, a substantial merchant, soon to be an MLA for Montreal (1841-1847), donated a generous £37.15s. to the institute's finances.

The new promoters reflected the same business and professional interests that characterized the first promoters. They differed, however, in omitting either dissenting ministers or French-Canadians, which suggests the more Tory ethos found also in the post-Rebellion institute in Toronto. While the Scots and American entrepreneurs had progressed beyond a somewhat combative earlier relationship, the Durham Report released in 1839 suggested that social intercourse between the English-speaking and French-speaking middle classes all but ceased after the Rebellion (Lucas, 1912). While accepting the Montreal merchants' desire for a unified St. Lawrence economy, the Report had alienated French-Canadians, whom it characterized as "an utterly uneducated and singularly inert population." It was against this background that an amalgamation was effected with the original body on June 1, 1840, and the title, Mechanics' Institute of Montreal, was taken.

A new constitution was inaugurated to implement the goal of "benefitting mechanics, whether masters, journeymen, or apprentices" by improving "their condition, socially and morally" (8). This explicit moral preachment typified the assurance and condescension of many middle class institute promoters. In 1841, the institute's library committee was likewise to conclude that, "in some minds a spirit of inquiry needs but to be awakened to insure a continued progression to a maturity of usefulness and greatness" (9). With "knowledge is power" as the motto, power or status is viewed here less as something to be achieved individually than as something to be conveyed in return for being considered socially useful. This attributes to the students a deficiency in cultural capital or stimulus, which deprecates the strong labour tradition of independent study and practical experience. "Useful knowledge" thus becomes an instrument in the political economy of middle class society, serving prescriptive notions of the public interest rather than meeting individual needs.

The target group to be served was identified as being mainly "those who are engaged in mechanical pursuits." Ordinary subscriptions were set at 15s. annually, or 3s.9d. quarterly, 1s.3d. quarterly for the sons and apprentices of members, and £5 for life members (10). Life membership was alternatively offered to those who would donate books or instructional materials to the value of £7.10s. Despite the competition of other newly refounded bodies, some 223 members enrolled within the first four months – only 24 of these had been in the membership of the original institute and only 6 qualified for the apprentice subscription (11). Membership afterwards began to fluctuate constantly, many attending for only a couple of years, not attending at all during the summer months when the port was busy, and often having their subscriptions in arrears.

Faced with a seemingly cavalier response to its program by the priority target group, the administration responded not by restructuring its program but by restructuring membership criteria. In 1843, women were admitted to membership, at a fee of 5s. annually. This policy change, common among contemporary institutes, marked a significant departure from the initial priorities. While regularly condemning the target audience for their indifference to "useful knowledge," the administration was slow to initiate systematic class instruction and clearly unable or unwilling to respond to the skilled workers' broader social, economic, and political concerns. Another embryonic market was lost after 1841 with the establishment of the Montreal Mercantile Library. Its library and lecture program soon developed to serve the needs of the burgeoning business community.

*New resources*

The resources mustered for this second venture were comprised of a program of lectures, classes, a library, and a museum. Clergymen, military officers, educators, and physicians were induced to lecture weekly on such varied topics as astronomy, chemistry, natural philosophy, vegetable physiology, jurisprudence, education, temperance, geography, Egypt, Palestine, and phrenology. Influenced perhaps by a prevailing imputation of a deficiency of abstract thought among mechanics, strenuous efforts were made to acquire scientific apparatus, visual aids and library materials, and to emphasize demonstrations. While some lectures drew only moderate attendance, science experiments and illustrations drew "the highest applause," while the pseudo-science of phrenology attracted "crowded and delighted audiences" (12). This suggests that the criterion of lecture success was Bentham's "greatest happiness of the greatest number," rather than the more mundane and demanding one of improved technical competence. This emphasizes an implicit priority of many voluntary bodies – the need to maximize income. Institutes were thus drawn to meet popular and discursive lecture interests because a more substantial market existed for them.

In seeking apparatus and equipment, the emphasis was clearly to facilitate a lecture program rather than a class program, although the new administration did inaugurate some class instruction in drawing and French. Attempts were made to purchase a magic lantern and a collection of astronomy slides in New York, and some general apparatus in London. Donors contributed items as diverse as geological specimens, a voltaic battery, an "electrifying machine," a small electrotype, a rotary magnet and weight, a stuffed crocodile, and a portrait of James Watt. M. Bailé, principal of the Collège de Montréal, loaned the institute an orrery for one lecture in 1841 (13). Communications with Dr. George Birkbeck, president of London Mechanics' Institution, England, indicated that apparatus suitable for large scale demonstrations was required, rather than that for individual or class use. Significantly, it was Birkbeck's advocacy that led the administration to approve £30 to enable four of its own members to construct needed apparatus in 1842. This project emphasized the potential of the idealized "intelligent mechanic," possessed of craft skills and with tools and materials, inventiveness, and now, some knowledge of scientific principles. This human resource, epitomized by a volunteer drawing instructor in 1840, was seldom utilized by an administration that relied essentially on middle class talents and collections.

While some might differ about what constituted "suitable books" (Keane, 1978), there was widespread agreement that the library constituted a major institute resource. Beyond the customary encouragement of donations, the administration allocated £50 for book purchases in 1840, and another

£40 in the following year. Early donations included such germane items as the *Penny Encyclopedia*, *Gardener's Arena of Science*, *Nicholson's Encyclopedia*, and *Nicholson's Five Orders of Architecture*. Early purchases varied from Charles Lyell's *Principles of Geology* to T.R. Malthus' *Essay on the Principles of Population*. By August 1840, the library included 136 volumes inherited from the original institute, 47 deposited by members, 56 donated by members, and 156 purchased. There were also 200 reviews and journals, and an outstanding order for 50 volumes of *Harper's Family Library*, all in the care of a salaried librarian who was provided with accommodation (14). With opening hours spanning the period from 7:00 a.m. (newsroom) and 9:00 a.m. (library) to 10:00 p.m., they served members who might work a ten or eleven hour, 6-day week. Conversely, the holdings reflected little that was even remotely related to such contemporary issues affecting mechanics as the Lachine Canal strike of 1834. Members' response may be gauged quantitatively by the one hundred of the 695 volumes then in constant circulation. The administration's response was expressed as "unmixed satisfaction" with the "good that may result to society" (15). From comparable libraries, it would seem that circulation figures increased as the proportion of scientific and technical works decreased. In fact, priorities beyond science and technology were as apparent in the early exclusion of fiction as in the inclusion of works on morality, temperance, and political economy. Despite explicit institute priorities furthering improved technical competence, the collections constituted less those of a specialist technical library than of one supportive of implicit middle class social values.

### *Watershed*

The admission of women to membership marked a significant step beyond the institute's initial priorities. One is conscious of the administration striving regularly both to serve as a "rallying point" for interests imputed to skilled workers, and yet to transcend this role. In November 1840, abortive discussions were held to amalgamate the Institute with the **Natural History Society** and the embryonic Mercantile Library. Such a rationalization would have constituted a major learned society with substantial resources. It would doubtless have established an organizational milieu supportive of the interests of the relatively few people then deriving a regular income from scientific work. It might have enabled Canada to publish its first truly scientific journal at a period when much pioneer research was being attempted. Conversely, it would probably have weakened the already tenuous relationship with skilled workers.

Another move to play on a wider stage came with the institute's launching of its first public exhibition of science and technology in February 1843. Faced with "the most rigid economy" after "kindred

institutions" attracted away some of its 286 members (of whom 73 were apprentices), the administration launched this new venture (16). As in Britain and the United States, an exhibition in Montreal seemed to offer the potential to reinforce the scientific ethos and attract wider public support and resources. Specifically, the institute now needed accommodation suitable to house a proposed program of science lectures and classes. In now seeking to promote "the advancement of our country," the administration could not but realize that its membership to date had represented perhaps 1% of the city's population at any one time. However, a more substantial "useful knowledge" impact on the city's mechanics can be postulated if one considers that there was a constantly changing institute membership and if one includes the membership in "kindred institutions" as well as those who were engaged in independent study. Furthermore, a substantial part of the population – women, children, the old, and the unskilled and/or illiterate – were excluded. Some corrective to this would involve reducing institute membership figures by the numbers of non-tradesmen, and weighting membership figures in terms of the two linguistic communities. Overall, therefore, the institute seems to have made some contribution to social integration and identification among the predominantly English-speaking mechanics.

A new climate of opportunity was exemplified in Montreal by responding to declining enrollments with a public exhibition, rather than with the customary recriminations. Audiences of between five and six hundred had already mustered for a public performance by Charles Dickens, himself a mechanics' institute president at various times (Forster, 1904; Keane, 1985, p. 234). There was now talk of moving the capital of the united Province of Canada from Kingston to Montreal, of ambitious public works schemes and new links to be forged to the sea. Technological innovation continued also, as evidenced by the number of patents being taken out on engines, boilers, propellers, and paddlewheels (17). To date, such developments had depended more on imported skills, apprenticeship, and on-the-job training, than on any resources mustered by the institute. Indeed, the Eagle Foundry, probably Montreal's most significant engine works from the 1820s to the early forties, began with "imported tools, capital and . . . skilled workmen . . . from New Jersey" and thereafter had "a regular exchange of skilled workmen between Montreal and Vergennes" (Tulchinsky, 1977, p. 213, 215). Such mechanics seem to have sampled the institute's varied resources without yet sharing the administration's conviction that its lecturer on the steam engine possessed a "perfect knowledge of the subject" (18). Some potential for development among French-Canadians must also have seemed apparent when Augustin Cantin opened his shipyard in 1843; he was to become Montreal's greatest steamboat builder by the end of that decade (Tulchinsky, p. 209).

The first public exhibition met the fundamental priority of raising funds; it realized a net profit of £25.10s.1-1/2d., and this should be seen in the context of a £30 donation by the governor and a government grant of £50 (19). Despite some trepidation by the administration, the public responded well and enjoyed the "variety of amusements," and musical performances. Members were portrayed as respectable and dependable citizens, and the institute acquired a higher profile as a community organization attuned to wide reaching plans for the city's future. Two years later, official recognition of this status came with a formal charter of incorporation.

### *An evaluation*

Did such recognition confirm the validity of the priorities? Insofar as the major explicit priority of improving technical competence among skilled workers is concerned, the answer must be No. The venture was necessarily experimental, based on conviction rather than research, and this objective proved to be overly optimistic, if not rhetorical. There is no evidence that a substantial market then existed in Montreal for a sustained, intensive and graduated program such as might be expected to realize this objective. Equally, the administration displayed a chronic inability to muster sufficient resources, even to sustain a more limited parallel objective among apprentices. Such science teaching as was sustained seems to have emphasized simplified, ad hoc presentations of factual "pure" science, rather than in-depth, systematic, or speculative treatments of applied science. The membership responded enthusiastically to lectures and demonstrations on astronomy and phrenology, disdained occasional lectures on the steam engine, and relegated drawing and mathematics to a handful of apprentices. Thus, even if contemporary science had that degree of industrial utility which promoters found it politic to proclaim, this had yet to be demonstrated to and accepted by this non-traditional student body. Indeed, prior to the industrial exploitation of the Lachine Canal after 1846, it is doubtful if Montreal's manufacturing sector possessed either the size or technological sophistication to utilise much of such knowledge.

The impact of the implicit priority of social control is more difficult to analyze. For the ever changing ordinary membership, the venture would seem to have offered but a limited social identity, buttressed in part by their presence in a still predominantly French-speaking environment. Its Anglo-Saxon ethos, to be interpreted as part of "internal colonialism" (Jarrell, 1981), was indeed to be challenged in 1844 with the establishment of the **Institute Canadien**. Here "useful knowledge" was to be combined with nationalism, *fraternité*, and ultimately a fiery radicalism. A social and moral preachment which constituted a traditional rite of passage for apprentices was clearly less acceptable to journeymen, particularly if crude or

denunciatory. If however it was subtle, inviting, and pervasive, then some success might be expected. Skilled workers and their families were faced with middle class values from employers, government, churches, schools, and the press, as well as the mechanics' institute's administration. As a not homogeneous labour aristocracy, their own evolving values were still being tested in confrontations with employers. Thus, even in rejecting the institute's proclaimed community of interests, was it possible they were influenced by "a subtle model of natural order" (Shapin & Barnes, 1977) implied in the scientific curriculum? Indeed, institutes generally seem to have indulged in a simplification of knowledge into certainties, facts, rules, and demonstrations, whose broader social impact would be difficult to gauge.

Clearly, the institute's resources also served originally unintended objectives, if, sometimes, to originally unintended members. An increasingly fashionable lecture program had proved entertaining and even profitable, while the library's importance had attracted substantial investment and patronage. Indeed, by 1843, the institute constituted something of a role model, with Brockville Mechanics' Institute interested in its library policy and Quebec Mechanics' Institute about to emulate its public exhibition.

The institute shared one major transformation with contemporary Canadian middle class scientific societies. In order to survive, the institute had become more of a cultural or social institution than a channel for scientific information, or a molder and reinforcer of the scientific ethos (Jarrell, 1983). If some might view this as a positive step in the direction of a needs-meeting philosophy, others might equate it with failure. For the latter, a priority of survival was self-serving – prized resources were being squandered on a less demanding program for a less deserving clientele. While successive administrations remained attuned to the broader potentialities for adult education, the original utilitarian priority of these formative years continued to find some expression in programming. Clear recognition of this voluntary agency's pioneer contributions occurred when the Canadian Association for Adult Education held its first Montreal meeting on the institute's premises.

## NOTES

1. Montreal Mechanics' Institute (MMI), Ms. minutes, November 21, 1828.
2. *Montreal-Herald*, Feb. 23, 1818; *Montreal Gazette*, July 14, 1835.
3. MMI, Ms. minutes, February 18, 1834.
4. MMI, Ms. minutes, December 15, 1829.
5. *Montreal Gazette*, March 4, 1834.
6. MMI, Ms. minutes, December 24, 1833.

7. MMI, Ms. minutes, February 11, 1840; May 4, 1840.
8. MMI, Ms. minutes, February 7, 1840.
9. MMI, Ms. minutes, October 20, 1841.
10. MMI, Ms. minutes, March 10, 1840.
11. MMI, Ms. minutes, May 4, 1840.
12. MMI, Ms. minutes, November 3, 1840; May 4, 1841. See also David de Giustino, *Conquest of mind: Phrenology and Victorian social thought*. London: Croom Helm, 1975.
13. MMI, Ms. minutes, October 20, 1841.
14. MMI, Ms. minutes, August 4, 1840.
15. MMI, Ms. minutes, October 20, 1841.
16. MMI, Ms. minutes, February 8, 1842; February 7, 1843.
17. See *Catalogue of Books in the Library...*, Montreal: Owler and Stevenson, 1855; and MMI, Letter Book, March 15, 1843, letter to Dr. Thomas Reynolds.
18. MMI, Ms. minutes, February 7, 1843.
19. MMI, Ms. minutes, February 7, 1843.

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