

Community Colleges and the Division Between Mental and Manual Labour

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Poulantzas' (1978) analysis of the contribution of the educational apparatus to the reproduction of the division between mental and manual labour is elaborated upon to provide a theoretical framework for examining community colleges in terms of their relationship to the capitalist labour process. The thesis is that community colleges legitimize political relations in the labour process by defining the knowledge of graduates as inferior to the knowledge of university-educated workers trained in comparable specialities. Community college programs designed for engineering technicians are discussed in some detail and a number of suggestions for future research are advanced.

Cet article utilise l'analyse de Poulantzas (1978) sur la contribution de l'appareil éducatif dans la reproduction de la division entre travail manuel et travail intellectuel pour élaborer un cadre théorique permettant l'examen de la relation entre les collèges communautaires et le procès du travail capitaliste. L'auteur soutient que les collèges communautaires légitiment les relations politiques dans le procès de travail en accordant un statut inférieur au savoir de leurs gradués face aux universitaires formés dans des domaines comparables. Il analyse en détail les programmes des collèges communautaires des techniciens en génie et suggère quelques avenues de recherche.

Few theoretical or empirical analyses of community college systems have been conducted by Canadian sociologists of education. As Pike's (1981) recent review of Canadian literature on postsecondary education makes very clear, Canadian sociologists have devoted far less attention to the area of higher education than they have to elementary and secondary education. The most obvious reason for the paucity of literature on community colleges is that their emergence has been a very recent development in the history of postsecondary education in Canada. In fact, most community colleges first opened their doors to students in the early sixties. In spite of their late inception in Canada, community colleges currently serve a surprising proportion of postsecondary students. Although universities continue to maintain the largest share of graduates, in 1978, community colleges awarded 62,443

certificates and diplomas compared to 103,738 degrees awarded by universities (Clark and Zsigmond,1981:62,66). In the United States, where the genesis of community colleges can be traced to the turn of the century, some sociological work has been carried out. This literature emphasizes the extent to which community colleges have contributed to a stratification process in postsecondary education in the United States as well as the implications of this process for individual mobility (Pincus,1978,1980; Karabel,1977; Mayes,1977; Bowles and Gintis,1976; Zwerling,1976).¹

In this paper, I will depart somewhat from this emphasis, to focus on the role of community colleges in the transmission of skills which are employable in the workplace. While the stratification process is not the immediate concern here, it is, however, an important one at a more general level. In raising the issue of community colleges and work skills, various perspectives which focus on the relationship between schools and the workplace will be examined. After identifying some of the shortcomings of this literature, an alternative position will be proposed, one which focuses on the ideological role of the educational system in the transmission of skills. The work of Nicos Poulantzas on the contribution of the educational apparatus to the reproduction of the division of mental and manual labour will be utilized since it is particularly helpful in understanding the relationship between community college education and the capitalist workplace.

One of the most salient features of community college systems in Canada is their emphasis on vocational training or

educational programs which are designed to prepare individuals to assume particular positions in the work world (Martin and Macdonell, 1978:28). Unlike postsecondary education at the university level, which is typically more general, community college programs are often geared toward specific work destinations. As the designation "community college" conveys, many of these institutions are perceived as responding to particular labour market demands arising in the communities in which they are situated. A variety of career-oriented programs are offered to students: training in numerous engineering and medical technologies, nursing studies, clerical and business education, and various other vocational programs which evoke images of skilled positions in the realm of work. The term "community college" is normally associated with larger educational establishments offering a comprehensive range of postsecondary programs. In addition, a variety of more specialized institutions such as schools of technology, agriculture, and nursing, can be included under the broad category of "community college". In comparison to the type of credential conferred by the university, community colleges offer no degrees, although, in some provinces, studies may be continued at the university level. Community college programs usually lead to certificates and diplomas, with courses varying in length from one to three years of study.²

Although the "training for skills" function is often explicitly claimed by community colleges, recent "conflict" interpretations of schooling call such an assertion into question (Bowles and Gintis, 1976; Shecter, 1977; Collins, 1979;

Harp,1980). For example, sociologists who have investigated the origins of public education in Canada have advanced the view that the need for technical skills was never a major impetus in the development of Canadian educational policy. Nor, as its proponents implied, was universal public education designed to provide mobility for the masses. The schools were depended upon to constitute "a successful program of integration" which "would lead to a passivity on the part of people towards the inequality of society" (Harp,1980:222). According to Shecter (1977:379), the school system was fashioned to train workers who would be sufficiently disciplined to perform the function of labour in industrial capitalism. Bleasdale (1978:14) writes: "The social organization of the school was, in its early form, an almost exact replica of factory organization." With specific regard to technical and vocational training in Canada, after examining the historical record, Shecter (1977:390-398) and Harp (1980: 222-224) arrive at similar judgements. They conclude that the real goal behind such education reflected its social control potential rather than a desire to deliver technical skills.

A number of theoretical stances concerning the school's ability to supply technical skills can be isolated. The perspective which views the education system as primarily engaged in training students to fulfil the technical requirements of work has been identified as "technological functionalism" in the sociological literature on education.³ Adherents of this position, perhaps best represented by Burton Clarke (1962), argue that the skills marketed by the school are tailored to

the exigencies of a technologically complex and advanced societies. In contrast the central argument running through the neo-Marxist stance put forward by Bowles and Gintis (1976) is that the chief role of the school is to turn out students whose non-cognitive personality traits and attitudes are conducive to acquiescence in a capitalist work world. In this view of the manner in which educational activities are related to the workplace, the ostensible function of the school in the delivery of cognitive or technical skills camouflages its role in producing students who will adapt easily to the social relations of production. In this way, the education system aids in the smooth reproduction of capitalist society. Randall Collins amplifies on Bowles and Gintis' position that the school's forte is not in the realm of technical training. Writing in a neo-Weberian conflict vein, Collins portrays the school as an agency for producing and distributing status cultures, suggesting that status groups manipulate educational policy in order to regulate entrance into their particular ranks. The myriad types of knowledge which the school produces are understood as contributions to the identity and exclusiveness of status groups rather than to the need for skilled workers. While Collins shares Bowles and Gintis' indictment of technological functionalist theories, his analysis does not proceed from a critique of capitalist society.

Bowles and Gintis have influenced conceptions of the relationship between schools and work more than any other recent writers in the sociology of education. For this reason, the

tenets of their thesis and the criticisms which have been leveled against them will be explored further. In their celebrated Schooling in Capitalist America, Bowles and Gintis (1976:47) assert that, in the past, theorists have incorrectly perceived work in capitalist society as essentially a technical process requiring an education system which prepares individuals for mastery of technical skills. Alternatively, they point to work under capitalism as being principally a social process demanding schools which equip students with the social dispositions necessary for the success of the capitalist system of production. Bowles and Gintis provide examples of how the evolution of the education system in the United States has been shaped by interests which have primarily reflected capital's need for control over the labour process, rather than for the technical expertise of workers (1976:73-81). In their formulation of what has been labeled the "correspondence principle",⁴ they describe how the education system accomplishes its task:

The educational system helps integrate youth into the economic system, we believe, through a structural correspondence between its social relations and those of production. The structure of social relations in education not only inures the student to the discipline of the work place, but develops the type of personal demeanor, or modes of self-presentation, self-image, and social-class identifications which are the crucial ingredients of job adequacy (1976:131).

Beyond correspondence at the aggregate level, the social relations at varying levels in the education system correspond to the social relations at different layers in the hierarchical division of labour. Hence, emphasis on rule following at lower levels of the education system (e.g., junior and senior high

school) parallels the capitalist imperative of tight control over workers at lower levels in the workplace. At higher levels in the education system (e.g., university), the social relations are arranged to prepare students for roles in higher levels of the workplace where dependability and internalization of the norms of the enterprise are expected.

In their application of the correspondence principle to the educational processes of community colleges, Bowles and Gintis draw attention to the heavy vocational orientation there compared to four-year universities. They suggest that community colleges have evolved in response to the needs generated by the expansion of corporate capital for new kinds of workers which they define as "skilled sub-professional white-collar workers" (1976:205,206)⁵. With regard to social relations, their impression is that the general milieu of the community college classroom bears more resemblance to the high school than to the university. Community colleges have often been described as "high schools with ashtrays" (1976: 212). More guidance and control is operative in the community college, there is much less room for individual decision-making regarding selection of courses, and the student is restricted in the pursuit of a liberal education. Bowles and Gintis also remark that discipline is stressed much more in the community college than in the university, with specific assignments and deadlines more likely to be employed in evaluation procedures.

Bowles and Gintis' work has been helpful in identifying elements of the education system which had previously escaped

the attention of sociologists. Their contribution has, however, met with a critical reception from neo-Marxists as well as sociologists of other theoretical persuasions. The most pervasive objection to their analysis is that it over-estimates the fit between education systems and the capitalist workplace. Shapiro (1980), while defending the position that schools assist in the maintenance of the capitalist system, allows the school much more autonomy from the direct influence of capital on educational policy. He suggests that, far from being completely malleable, education systems experience much conflict and contradiction. Gorlick (1977) and Apple (1980) join in this criticism, contending that students do not merely submit passively to the social relations of the classroom.⁶ Moreover, worker resistance to the social relations in the workplace is ubiquitous. The implication is that the correspondence principle may not be functioning as Bowles and Gintis believe.

Another major problem is that Bowles and Gintis' approach neglects a large area of investigation which may be crucial in explicating the ideological role of education systems in capitalist society. The concern here is that Bowles and Gintis have taken for granted the formal or overt curriculum of the school by focusing almost exclusively on what has been referred to as the "hidden curriculum" (White, 1980:56,57,81). In the sociology of education literature, the "hidden curriculum" pertains to the mechanisms by which values and norms are promoted by the school. As opposed to the formal content of the explicit curriculum (i.e., such school subjects as

mathematics and reading), the "hidden curriculum" operates through "the organization of the classroom and the rewards and punishments schools employ to regulate student behavior" (Hurn, 1978:192).⁷ In this context, because Bowles and Gintis view the relationship between the education system and the workplace almost exclusively in terms of how the former reproduces the social relations of work, they omit analysis of what is transmitted to students through the overt or explicit curriculum. Recent developments in the perspective emerging in Britain "the new sociology of education", have challenged this convention of taking the school curriculum as a given. This work points to the importance of examining the nature of school knowledge, an area which has previously remained unexplored by sociologists.⁸ Bowles and Gintis' assumption that the capitalist system does not rely upon the school for technical skills appears to have prevented them from considering the fact that students at all levels of the education system spend most of their school hours learning and being taught what is presented as "objective knowledge".

Even if it is conceded that the school's role in reproducing the social relations of production supercedes its contribution to the technical forces of production, it would not be safe to assume that the school has no contribution to make in training workers to perform specific skills. Many workers arrive at the workplace ready to carry out tasks which they would be unprepared to conduct successfully if it were not for their educational experience. For example, the computer programmer must learn the skills necessary to command particular

computer operations, the draughtsman must be proficient in executing designs on the draughtboard, and the medical practitioner must know the appropriate treatments to prescribe for given illnesses. That the educational system at various levels has the capacity to equip individuals with skills which are, to some extent, applicable in the workplace cannot be debated.⁹ What can be questioned is the logic by which these skills are organized or divided in the capitalist workplace and, subsequently, how the education system succeeds or fails in responding to such logic. It is in this respect that it becomes important to closely scrutinize the overt curriculum which pertains to the delivery of technical skill, and how it relates to the capitalist workplace.

From this vantage point, what warrants study is not only the varying social relations at different levels of the education system but, also, the types of knowledge which are peculiar to particular levels. The sociological investigation of classroom knowledge is particularly important when it is considered that the education system is purported to be an agency which generates and dispenses "knowledge". This is not intended to suggest that the elements of the hidden curriculum are of no significance. As Apple proposes (1979:40), there is a complementary interplay between the social relations of the classroom and the formal corpus of school knowledge. Nevertheless, it is certainly true that sociologists need to know much more about classroom knowledge and its affinity to the workplace.

Before proceeding to an examination of the relationship between the community college curriculum and the organization

of the capitalist labour process, it is necessary to review some of the primary characteristics of the latter. The owners of the means of production organize and control the labour process to correspond to their interests. Work under capitalism is not arranged and modified according to the needs of the workers who perform the labour. Braverman's (1974) work has been useful in identifying features of the division of labour in monopoly capitalism. A central theme in his writing is that the capitalist labour process separates the functions of conception and execution: "The separation of hand and brain is the most decisive single step in the division of labour taken by the capitalist mode of production" (Braverman, 1974: 126). This separation results in a small number of managers becoming responsible for the mental labour involved in planning and organizing production while the majority of workers simply carry out the work which has been conceived by management. Effectively, capital's monopolization of the technical knowledge of the labour process is ensured and workers are prevented from initiating any changes in the organization of production.

Poulantzas (1978) has given more rigorous theoretical attention to the notion of the separation of conception from execution, which he speaks of as the mental/manual division of labour.¹⁰ He is emphatic on the point that the division of mental and manual labour is essentially an ideological division rather than one inherent in the actual technologies of capitalist production. It is in this context that he writes (1978:225): "In the actual organization of the labour process, the social division of labour, directly dependant on the relations of

production, dominates the technical division." Echoing Braverman, Poulantzas asserts that this division takes place as a condition for ensuring that knowledge is monopolized by capital, through its agents, and removed from the direct producers or manual labourers. The work of mental labour is more precisely delimited in the following manner (1978:238):

We could thus say that every form of work that takes the form of a knowledge from which the direct producers are excluded, falls on the mental labour side of the capitalist production process, irrespective of its empirical/natural content, and that this is so whether the direct producers actually do know how to perform this work but do not do so (again not by chance), or whether they in fact do not know how to perform it (since they are systematically kept away from it), or whether again there is quite simply nothing that needs to be known.

The management and supervision of workers, which constitutes political relations in the capitalist labour process, are legitimized by the division of mental and manual labour. The functions of management and supervision in their capitalist form are justified by the concentration of knowledge or technical expertise in the hands of those individuals who carry out these functions. Poulantzas describes this monopolization as a "secrecy of knowledge" which excludes manual labour and is a further step in the capitalist compulsion to detach the direct producers from their means of production. Manual labourers are ideologically dominated by capital in the sense that the knowledge they are supposed not to possess is depicted as the basis for their preclusion from participation in the organization of production. Poulantzas elaborates (1978:241):

it is not by chance that the various categories of foreman who perform direct supervisory tasks also

present themselves as bearers of a particular knowledge in relation to the workers whom they control. This is precisely how this work of management and control that is necessary to every "co-operative process" falls to mental labour within the capitalist social division of labour.

Gorz (1976:175,176) provides a good example of how the possession of knowledge is used to defend political relations, citing the reflections of a technician who justified his supervisory role over manual workers on the basis of his acquisition of training in calculus. The technician admitted he did not use calculus in his job and that workers could gain comparable knowledge through practical experience. He maintained, however, that his calculus set him apart from other workers because he had gained a more comprehensive theoretical knowledge of the work supervised.

Most of Poulantzas' discussion of mental and manual labour is specific to his theory of the political and ideological determinants of the "new petty bourgeoisie". The "new petty bourgeoisie" are agents of capital who perform unproductive labour (economic determination), carry out the functions of supervision and management in the labour process (political determination), and are located primarily on the mental side of the division between mental and manual labour (ideological determination). It is not necessary, however, to view the division between mental and manual labour only as it pertains to the class determination of the new petty bourgeoisie.¹¹

The division between mental and manual labour has wider applications. It exists in varying degrees within mental and manual labour and can be understood as a process tendential to

all levels of the labour process (1978:255).¹² On the side of manual labour, Poulantzas notes that the division between mental and manual labour is manifested in the various partitions of skill that exist in the labour process (unskilled, semi-skilled, etc.). Understood as a monopolization of knowledge which legitimates political relations, the division between mental and manual labour can also be detected in work categories which have traditionally been perceived as mental in orientation. Braverman (1974:243-258) illustrates this point in his treatment of how the functions of conception and execution are separated in clerical work as management takes possession of the knowledge involved in the technology of office work. The same holds true for scientific workers who perform supervisory and management functions. Braverman (1974:236-247) portrays their work as being divided in such a manner that knowledge is concentrated in varying measures at different levels within their ranks.

Poulantzas devotes considerable attention to the contribution of the capitalist education system to the reproduction of the division between mental and manual labour (1978:259-270).¹³ Although based upon observations of the French educational system, his basic propositions may be re-worked and applied to the role played by community colleges in the division between mental and manual labour. First, Poulantzas considers the major role of the school to be the preparation of mental labour for its function in capitalist production. At the level of higher education, this is achieved through the provision of a general knowledge of the symbols and rituals of technical expertise appropriate to mental labour.

At levels in the system charged with preparation for manual labour, interest is mainly in teaching "discipline, respect for authority, and the veneration of mental labour that is always "somewhere else" in the educational apparatus" (1978: 266). Poulantzas assigns no weight to the ability of the educational system to transfer specific skills to students who will carry out manual work. All components of the educational process in elementary and secondary schools are dismissed as having no utility, with the exception of the hidden curriculum. Similarly, Poulantzas proposes that the education of mental labour is so general that it is not geared toward providing specific technical skills. Again, he emphasizes that the primary educational transmission at this level entails the ideological "secrecy of knowledge" which elevates mental labour above manual labour. Poulantzas' position is well summarized in the following statement (1978:266):

The main role of the capitalist school is not to "qualify" manual and mental labour in different ways, but far more to disqualify manual labour (to subjugate it), by only qualifying mental labour

There is no doubt that, in expounding his position on education, Poulantzas has exaggerated the role of the division between mental and manual labour. In dichotomizing the education system in terms of preparation for mental and manual labour, he ignores subtle variations at different levels in the system. In one sense, it could even be argued that Poulantzas' analysis of the training of manual labour brings us no further than the correspondence principle, in that he reduces the schooling process to the operation of the hidden curriculum. What is seminal about Poulantzas' thinking on the school, however, is

that he credits the education system with the capacity to inculcate particular conceptions of mental and manual labour which aid in the legitimation of the capitalist division of labour.

Elements of the division between mental and manual labour are visible in the way in which the education system fragments knowledge to reflect different levels of skills. This is evident in the categories of credentials for many professional specializations, each purporting to correspond to a particular concentration of knowledge or technical expertise. The community college system plays a crucial role in this fragmentation of knowledge. In many cases, the programs available to students relegate them to places in the labour process which are associated with lower or intermediate rungs in the hierarchy of knowledge. Graduates of university programs, on the other hand, are placed in the upper reaches of the hierarchy.¹⁴ If we refer to the division between mental and manual labour in terms of the propensity for knowledge to be monopolized at certain levels in the labour process, it is not difficult to locate community college graduates on the manual side of the division in contrast to university graduates.

The discrepancy between the places occupied by the two groups in the workplace is demonstrated in Table 1, which presents the most frequent occupational categories of students who graduated from community colleges and universities in 1976. The figures are based on the 1978 Statistics Canada employment outcome survey, involving a sample of 29,609 postsecondary graduates (Clark and Zsigmond, 1981).

table 1
Most frequent occupations of 1976
university and college graduates

		University average annual salary \$		College average annual salary \$
senior & middle managers	7.4	17,200	4.3	12,600
management support (accountants, auditors, financial & personnel officers, etc.)	6.9	14,500	3.1	13,100
architects & engineers	4.8	18,200	-	-
architecture & engineering technologists, draughting occupations, surveyors	-	-	5.5	13,500
salespeople (commodities)	2.8	13,900	4.6	11,000
elementary & secondary school teaching & related occupations	29.5	15,8--	2.7	8,900
vocational & community college, & specialized teachers	4.1	16,000	-	-
mathematicians, statisticians, computer scientists	2.7	16,100	-	-
physicians, dentists, veterinarians	2.4	18,800	-	-
pharmacists, dieticians, optometrists, medical & dental technologists	-	-	6.5	12,400
nurses, therapists	-	-	20.0	13,000
lawyers & other law occupations	3.2	16,000	-	-
social welfare, community service workers	2.8	14,100	-	-
finance & statistics clerks	-	-	4.2	9,600
stenographers & typists	-	-	6.8	9,100
general office clerks	-	-	2.6	10,000
other	33.4	13,500	39.7	12,500
total	100.0		100.0	

Source:

Table 1 is taken from Table 6 and 7 of Clark and Zsigmond (1981:63,67). The figures represent estimates based on the total sub-sample of 18,849 university graduates and 10,790 college graduates. Data on the occupations of 4,629 respondents (15.6% of the total sample) were not available. Only the ten most frequent occupational categories for each group are indicated. Consequently, empty cells do not imply frequencies of zero. The actual frequencies for many of the empty cells, however, would be too small to permit statistical reliability. Sub-sample sizes and missing data documentation are derived from the Statistics Canada 1976 Employment Outcome Survey data file maintained by the Social Science Data Archives, Carleton University, Ottawa.

The sample was designed to represent the 1976 Canadian cohort of 26,250 "college", and 66,481 university graduates from nine provinces (Quebec was excluded).¹⁵ The tabulations reveal that, relative to university graduates, community college graduates have a much lower rate of participation at the managerial decision-making level. Moreover, the large differences in salaries imply that community college graduates who are employed in this category are likely to be assigned to the lower echelons. Their representation in the "management support" category leads to a similar conclusion about their position in the workplace relative to university graduates. The clerical occupations, where a large number of community college graduates are clustered, suggest roles comprised of little control over the direction and organization of work. It is also notable that, in the classifications related to engineering and health services, community college graduates fulfil support or assistant functions to higher level positions which are linked to university training.

A range of occupational specializations, such as business administration, engineering, and health sciences, may be pursued at both the university and community college levels. What often distinguishes community college programs from university programs within the same specialization, however, is that recruits of the former are prepared for positions which are frequently subject to the supervision of university graduates in the political relations of the labour process. Titles such as "assistants", "technicians", and "technologists" abound in the course offerings of community colleges and are

indicative of the positions community college graduates occupy vis-à-vis workers who have completed university degrees. The specific tasks which its graduates are and are not qualified to perform in the actual work setting are often made quite explicit by the community college. For instance, in an academic calendar for one of Ontario's Colleges of Applied Arts and Technology (CAATs), the roles of graduates are often negatively defined in terms of what the graduate cannot expect to do. It is not uncommon for course descriptions to declare that certain work duties are reserved only for individuals who possess the kind of advanced training provided by universities. In turn, students are alerted to the fact that these superior-qualified workers will be responsible for supervising the work of community college graduates. One is left with the distinct impression that this community college wished to allay any illusions about the scope of the training it provided, and to establish that the knowledge it had to offer was inferior to that of the university.¹⁶

A good example of how the community college circumscribes the range of students' work skills in relation to "advanced" university education is provided in the training of engineering technicians and technologists. Accounting for about 16.2 per cent of community college graduates in 1976 (Clark and Zsigmond, 1981:54), the case of technicians and technologists is worth chronicling in some detail. A UNESCO document which reports on an international comparison of the education of technicians and technologists, describes the work of this group as "middle men". According to the report, their activities fall between

lower level "craftsmen" and university trained engineers, "top level personnel" (French,1981:16-17). Braverman (1974: 236-247) has noted that, under monopoly capitalism, the separation of conception from execution has penetrated the work of engineers and other scientists. He attributes the appearance of a middle layer cadre of technical workers to this phenomenon within the engineering profession. Referring to the new group of technical workers, he writes (1974:245,246):

There is generally no accepted definition of the term but the distinguishing characteristic of the technician is that he or she functions as a "support" for the engineer or scientist; the routine which can be passed to a lower-paid and slightly trained person goes to the technician.

The two to three year community college training period undergone by Canadian technicians and technologists would suggest that they are more than "slightly" trained.¹⁷

Utilizing Poulantzas' criterion, however, it is clear that this group would incline towards the manual side of the division between mental and manual labour, in light of their relationship to engineers.

In the province of Ontario, materials promoting technician and technologist careers in the various engineering specialities emphasize that training in such fields offers challenging opportunities in the labour force, where comprehensive practical and theoretical skills will be demanded. The accompanying enumerations of routines in which graduates are expected to show competence, point, however, to very specific work skills. The materials intimate that more creative work is the preserve of professional engineers who will summon the services of

technicians and technologists to implement the practical operations necessary to test their ideas. When more stimulating responsibilities are delegated, aspiring technicians and technologists are assured that engineers will often be available to provide direction. It is not unreasonable to speculate that engineering technology students are reminded daily of the relative merits of their knowledge to that of engineers. Frequently, their instructors are professional engineers who have had several years of industrial experience before teaching.¹⁸

Not only is educational experience presented as the basis for the exclusion of technicians and technologists from much of the work of engineers, but, within the area of engineering technology itself, there is a further differentiation. The training of technicians, which normally lasts for two years in the community college, is designed to develop skills which are more manual in nature than those of the technologist. The technologist, whose schooling is extended to an additional year, is supposedly certified for more theoretical pursuits. As an electronics engineering technology instructor in an Ontario CAAT put it, the work of the technician is a "hands-on operation" while the technologist's duties require more "thinking". In turn, just as the engineer's training justifies the supervisory role over technicians and technologists, the technologist will sometimes be responsible for overseeing the work of technicians. In Ontario, many of the technician and technology programs share a common core of courses during the first four semesters of study, with technologists remaining for a fifth and sixth semester. Eight months' of supplementary

training apparently equips technologists with the necessary knowledge to enable them to take a superordinate position to technicians. The role of the educational system in the legitimization of political relations in the labour process is particularly evident in this example. The argument has additional cogency when we consider that the schooling of most engineers, whose knowledge is reputed to be "advanced" in comparison to the knowledge of technicians and technologists, takes place in four years of university training.

The education system makes a very definitive contribution to the reproduction of the division between mental and manual labour as it applies to the case of engineers and the engineering technology coterie. In fact, the education system appears to have been structured to permanently maintain the sharp division between the two groups. To take the example of Ontario again, the terminal quality of community college credentials prevents technicians and technologists from building on their educational experience to become engineers. The only course open to them is to enrol in a university engineering program. Clement (1981: 213-214) provides a good example of this educational barrier in one of the INCO mining company's research and development department where engineers and technicians worked closely together in a team environment. In spite of a fair degree of autonomy and input into the research process, the only strategy for career mobility available to the community college-trained technician was a return to school to pursue a university degree. Because the diplomas and certificates awarded by CAATs are not transferable to university programs, to attain the status of

engineer the technician or technologist must return to "square one" in the postsecondary system.

While I have focused on the training of engineering technicians and technologists, it would not be difficult to expand the analysis to other community college programs. As alluded earlier, a large number of programs are geared towards preparing graduates for roles in the workplace which are subordinate to positions filled by individuals with university training. With its many skill distinctions, the health sciences field provides parallels to the engineering speciality in terms of the division between mental and manual labour. Community college programs related to dental, laboratory, and pharmacy technology are also comparable to engineering technician and technologist programs. The field of nursing comprises the largest segment of community college graduates. This is clearly a field subservient to medical careers reserved for university graduates, including nurses trained in four-year Bachelor of Science programs. Finally, community college courses that provide training for cartographic, survey, architectural, museum, and library technicians, and assistants in the legal and accounting professions, can be situated within this discussion.¹⁹

Theorists influenced by the technological functionalist paradigm might argue that the various divisions in postsecondary education reflect the need to arrange the education system in a manner which efficiently transmits technical skills. Included in this tradition would be the insistence that advances in science and technology have made it necessary to organize

training so that certain individuals master the practical skills required to execute technical advances made in production. At a more theoretical level, the education system is requested to supply a cadre of experts who possess the esoteric knowledge needed to introduce improvements and innovations, as well as to supervise workers who are involved in more rudimentary facets of production. Implicit in this view is the assumption that the arrangement of technical roles in production emanates naturally from the progress of technology, and that the labour process is rationally organized to guarantee that production proceeds at maximum efficiency. It is not reconcilable with the Marxist premise that the technical division of labour is shaped by the social division of labour. The ideological components of the education system, which operate to maintain the technical division of labour endemic to capitalism, are undiscovered because the technical knowledge disseminated by the school and its application to production are taken for granted.

The thesis of this paper also contradicts some of the tenets of Bowles and Gintis' neo-Marxist approach. They do not include an analysis of the formal curriculum of the school and it will be recalled that they perceive the education system as engaged chiefly in the preparation of workers for the social relations of production rather than the training of students for technical competence in the field of work. I submit, however, that the transmission of work skills is central to the role of the community college system. This training function is relevant not so much for its technical

contribution to production, as for its ideological role in the reproduction between mental and manual labour.

This position has a number of implications for further research. Several questions arise regarding mechanisms within the community college curriculum which serve to mould students' conceptions about their role in the labour process. It is important to focus on how the knowledge presented in the community college classroom is compared to the knowledge university graduates are believed to possess. The promotional literature which the community college prepares to attract its clientele seems to convey the notion that the community college is more elementary than the university. The actual dynamics of how this view is imparted to students, however, requires examination. Answers to these questions may revolve primarily around an appraisal of the overt curriculum. The problem of how constituents of the hidden curriculum interact and conform with the overt curriculum may also be relevant. In this connection, it would be appropriate to consider how the modes of social control and organizational structures within the two main branches of postsecondary education reinforce the division between mental and manual labour. In focusing on particular programs, careful attention must be given to the way in which community college curricula vary from university programs in comparable specialities. It may be that community college and university students in related fields share similar curriculum content. If so, an identification of the efforts made to legitimize these similarities will become an essential part of the investigation. An integral component

of the overall inquiry would be an examination of the responses of community college students to their anticipated roles in the workplace as well as their perceptions of the positions they will assume in relation to university students. More particularly, such an analysis would be remiss if it failed to probe the possible forms of resistance which community college students exhibit toward the school's assignment of their position in the labour process.

The research concerns posed above coincide with many of the questions which have been generated by the "new sociology of education" and methods which have predominated in research being carried out within this perspective may be borrowed. Qualitative approaches aimed at uncovering elements of the curriculum which assist in the reproduction of the division between mental and manual labour would have great utility in addressing these questions empirically. This would entail lengthy observations in classrooms in order to assess the content of the curriculum as it relates to the labour process, its mode of presentation and the student response to it. Further insight could be gained through informal discussions with students, instructors and administrators. Without doubt, such a research programmatic would demand tremendous resources of time and commitment from investigators. In this way, much could be learned, however, not only about the role played by the school in the reproduction of the division between mental and manual labour, but also about the wider ideological processes in which the community college is immersed.

NOTES

1. Various authors point to the fact that community college students are recruited from lower income and education groups than are students in universities. In addition, the positions which community college graduates eventually occupy in the work world are inferior to those of university graduates in terms of prestige and financial reward. Canadian data on the background characteristics of university and community college students show a similar trend for Canada (Pike, 1980:130; Porter, Porter and Blishen, 1979; Dennison et al., 1975). Supplementary to the family background data, a Statistics Canada (Clark and Zsigmond, 1981) report on 1976 postsecondary graduates confirms that community college graduates command lower salaries than their university trained counterparts.
2. It should be stated at the outset that the nature of community colleges varies by province in Canada. Some community colleges offer only terminal career programs (Ontario) while others offer a mixture of terminal programs and programs which may be continued or transferred to studies at universities (British Columbia, Quebec). At the same time, community colleges have in common a non-degree granting status. For more detailed accounts of the diversity of community colleges in Canada, consult Martin and McDonnell (1978:28-32) and Harvey (1973:57-60).
3. See Karabel and Halsey's (1977) review of theoretical work in the sociology of education, where the tenets of technological functionalism and other competing theoretical perspectives in the sub-discipline are delineated.
4. Several other American educational theorists have posited similar versions of Bowles and Gintis' "correspondence principle" (Behn, et al., 1976; Carter, 1976; Levin, 1976).
5. It is interesting to note that they draw attention to the fact that the Carnegie Commission on Higher Education in the United States has had a significant impact on the patterning of the community college system in the United States. Their insinuation is that capital's interests have been represented in the development of policy on community college education. They also note, as has Karabel (1977), that the needs of capital in the area of curricula are represented on an ongoing basis by members from local business communities on community college advisory boards.
6. Paul Willis' (1977) important British study gives empirical support to this contention.

7. In some instances, it is difficult to separate the hidden and overt curricula, since both have the ability to impart norms and values. For example, McDiarmid and Pratt (1971) have demonstrated that the presentation of Canadian history in elementary schools (which would be identified as part of the overt curriculum) has often encouraged negative values and beliefs about trade unions, racial groups, and certain political systems, etc.
8. Advocates of this perspective prescribe a sociology of education which takes as problematic "what counts as educational knowledge and how it is made available" (Young, 1971:2). Although much of this work focuses on classroom knowledge as negotiable between teachers and students and has been faulted for failing to take into account the external structural constraints on the school (Sharp and Green, 1975:16-35), it has stimulated research in the area of curriculum. For a review of the major theoretical positions of the "new sociology of education" see Hurn (1976).
9. This remark must be qualified with the acknowledgement that we may question how well the education system prepares individuals. Collins (1979) has argued persuasively that the education system is less efficient as a training ground for workers than on-the-job training. He contends that workers must supplement their educational training with much practical work experience before they become successful at their work.
10. Braverman (1974:114) notes that the designation "separation of conception from execution" and "the separation of mental and manual labour" are roughly equivalent. However, he favours the use of the "separation of conception from execution" since it applies not only to the removal of conception (brain work) from the work of those who perform manual labour (hand work), but also to mental labour itself.
11. In making use of Poulantzas' concept of the division between mental and manual labour it is not imperative to accept his theorizing on the determination of class boundaries in toto. For example, Wright (1978a:53) questions the validity of using the division between mental and manual labour as the ideological determinant of class boundaries when there are many forms of ideological domination in the labour process. Notwithstanding this reservation, Wright (1978b:196-197) concurs that the division is an important form of ideological domination.
12. Poulantzas suggests that it is not appropriate to think of the division between mental and manual labour in

terms of "clean jobs" and "dirty jobs", and reminds us that no work can be conceived of as totally devoid of a mental or intellectual component (1978:325,254).

13. See Shapiro (1980) for an excellent exposition of the major insights of Poulantzas on education.
14. In one of his last essays, John Porter (1979:263-280) cites Braverman's analysis of "the degradation of work in the twentieth century". Porter noted that the education system has spawned an "elite" of highly educated experts whose university training places them in a powerful position in production. In spite of the inflated qualifications needed to procure positions under the experts, Porter suggested that many of these subordinate roles involved routinized work that really required little training. While he hesitated to lay the blame on the technical division of labour unique to capitalism, Porter was adamant in his assessment that our esteem for credentials represented a misplaced respect that contributed to inequality in access to material privileges and input in the shaping of future society.
15. The Statistics Canada report grouped all non-university postsecondary graduates under the category of "colleges" (Clark and Zsigmond, 1981:38). Included in this grouping were graduates of colleges of applied arts and sciences, community colleges, institutes of technology, and all other postsecondary institutions which do not offer degree programs (e.g. surveying, agriculture, and nursing schools). The term "college" is equivalent to the term "community college" used throughout this paper.
16. American writers have recognized other features of the community college which are inferior to the university in the United States (Zwerling, 1976; Aronowitz, 1973: 90-91). These authors call attention to the disparity between the two types of institutions with regard to the funds at their disposal for physical and cultural resources, and point to a cultural poverty of community college campus life.
17. French (1981:87-89) gives a brief overview of Canada's system for training technicians and technologists.
18. In Ontario, community college instructors are required to have work experience in an area other than teaching.
19. For a more comprehensive list of similar courses of instruction available at the community college level in Ontario see *Horizons* 1981/82 (Ontario Ministry of Colleges and Universities, 1981:10-17).

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