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The Changing Employment Class Structure and the Pivotal Role of Professional Employees in a "Knowledge Economy": Canada, 1982-2016

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Abstract
This paper analyzes the changing character of the employment class structure in emergent "knowledge economies" on the basis of five national surveys in Canada during the 1982-2016 period. Professional occupations are found to be an increasing proportion of the labour force. But prior research has conflated four distinct class positions of professionals: professional employers; self-employed professionals; professional managers; and professional employees (Livingstone 2014). The changing general composition of professional and other occupations, of the general employment class structure and of professional classes within the employment class structure are all estimated. The most notable changes over this period are the growth of managerial classes, decline of traditional working classes and the growth of non-managerial professional employees. Professional employees may play a pivotal role in the further development of "knowledge economies". The latter part of the paper examines their changing working conditions and economic attitudes in comparison with those in other employment classes. Some implications of these findings are suggested.

Introduction
Advanced market economies are becoming increasingly reliant on specialized knowledge workers to increase productivity, continue to generate profits and sustain the existing social order. The more basic manual work is automated, the more pivotal the skills and knowledge of those in occupations identifiable as "professional" is becoming to design, perform, review and adapt the more information-based production activities that increasingly pervade the paid workplaces of emergent "knowledge economies". On one hand, the "capture" of the specialized knowledge of these strategically placed "knowledge workers" is seen as vital to continuing productivity and profitability by private capital (e.g. Drucker 1998), as well as for public sector effectiveness. Conversely, non-

managerial professional employees are now among the most highly organized groups of hired skilled workers in many countries, with substantial potential to negotiate sustainable working conditions, and perhaps to lead progressive labour movements early in the 21st century (Livingstone and Raykov 2014). This paper will offer an empirical assessment of recent changes in the general occupational and employment class composition of the employed labour force in Canada, with particular focus on non-managerial professional employees, their working conditions and their attitudes about some basic economic policy issues.

All work involves interaction of mental and manual dimensions. The work most commonly associated with abstract knowledge historically has been that of professionals. In many early civilizations, specialized bodies of abstract knowledge (and agents) dealt with ruling beliefs and ideologies (priests), health and well-being (medicine men) and protection of private property (law-keepers). In 18th century England, divinity, physicians, barristers and surveyors (as well as military officers) were still the main officially recognized “learned professions” (Reader, 1989). Throughout history, skilled trades have also developed with knowledge to design and use specialized tools to produce material goods, and many of the earliest trades continue to be recognized today (e.g. carpenters, masons).

With industrialization, the need for professionals to develop and apply abstract bodies of systemic knowledge in a widening array of disciplines, and the need for skilled trades to design, repair and adapt increasingly complex tools in many fields both grew substantially. Throughout modern history, the continuing development of technological devices has led to the reduction of the manual component of most work. The rise of mass production involved mind-numbing assembly lines for some workers but even here the reliance on heavy physical labour was reduced for the labour force generally. The rise of information technology in recent generations has moved more work activities into the abstract domain of manipulation of symbols, "...a shift away from physical cues, toward sense-making based more exclusively upon abstract cues; explicit inferential reasoning used both inductively and deductively; and procedural, systemic thinking" (Zuboff, 1984, p. 95). There are still many predominantly manual jobs and many more workers ready to take them in in order to subsist. But the dominant trend has been for abstract knowledge to become more prevalent in most jobs.

With continuing development of abstract knowledge and the pervasion of information technologies, the distinction between professionals using bodies of abstract knowledge to address social needs and skilled trades using specialized knowledge to treat physical objects has become increasingly blurred. The standard conventional criteria used to distinguish professionals in recent times have been: establishment of post-secondary educational programs for advanced training in the systematic knowledge of an occupation; formation of associations to represent the general interests of those in the occupation; and development of bodies to regulate codes of practice and licensing (see Adams, 2010; National Initiative for Cybersecurity Education, 2012). But the extent to which these features characterize occupations with either established or aspiring professional statuses varies widely, as well as the sequence in which they have developed these features. In recent generations, a wide array of old and new occupations have made claims to professional status, including most of those with grounding in any form of specialized knowledge (see Wilensky, 1964). Consider for example, air traffic controllers. In previous eras, such an occupation processing large arrays of varied physical objects would likely have been considered a skilled trade. But today, this occupation and a growing variety of other technologists and technicians who process bodies of information of any complexity may be considered as professionals using the conventional criteria, since they typically receive advanced training in post-secondary educational programs, commonly join organizations representing their specialty and are subject to licencing and/or practice codes. In Canada, widely used occupational classifications for some time have differentiated between fully established professionals (e.g. physicians, lawyers, architects, engineers), semi-professionals (e.g. nurses, social workers, air pilots, computer programmers, optometrists, physiotherapists) and technicians (e.g. engineering technologists, radiological technologists, air traffic controllers, dental hygienists) and distinguished these “professional” groups from skilled trades (see Pineo, Porter and McRoberts, 1977).

Compulsory skilled trades (such as electricians and millwrights) now have longer training programs with more complex bodies of knowledge than many of the newer aspiring professions, as well as higher memberships in representing organizations and higher levels of licencing and certification of practice. In the current context of completion of some form of post-secondary education by the majority of the labour force and computerization of most jobs, there is little in these criteria per se to distinguish between many professions and skilled trades today.

Without trying to make fine distinctions, we will first look at compositional changes in occupations generally categorized as professionals and skilled trades as proportions of the employed labour force, as well as proportions of established professionals, semi-professionals and technician categories, according to the best available evidence.

Basic Data Sources

All five national surveys used in this analysis have very similar design in terms of questions about occupation, production relations, working conditions and economic attitudes. The Canadian Class Structure Survey (CCS) conducted in 1982 by Clement and Myles (1994) provided a basic template for these questions in the later surveys. The later surveys began in 1998 (NALL 1998 Survey) including a larger focus on unpaid as well as paid work and formal and informal adult learning (see Livingstone, 1999). The following national surveys in 2004 (WALL 2004 Survey) and 2010 (WALL 2010 Survey) used the same format and permitted documentation of trends in relations between these dimensions of work and learning (see Livingstone, 2012). The 2016 survey was conducted as part of the SSHRC-funded Changing Workplaces in a Knowledge Economy project (CWKE 2016 Survey). The 2016 survey focuses only on the employed labour force (see Livingstone 2016). In all of these surveys, all respondents are over 18 years of age and coverage is limited to those who speak English or French and reside in a private home in one of the 10 Canadian provinces. It should be noted that all prior surveys were based on random digit dialling and interviews were conducted over the telephone, whereas the 2016 survey relied on telephone interviews combined with online interviews completed by respondents. The proliferation of cell phones and increasing reliance of people generally on electronic communication devices now requires use of such hybrid means to ensure representative samples of the population. In all surveys, the data reported are weighted by the best available population estimates for age, sex, educational attainment, and regional distributions. Differences in levels and trends cited in the text are all significant at the one percent level of statistical confidence. The interview schedules, an integrated codebook and summary reports of basic findings are available at www.wallnetwork.ca.

Compositional Changes

Efforts to document the changing occupational structure of the labour force have a long and torturous history in most countries. In our view, the most reliable classification of the Canadian labour force is the 16-category system developed by

Pineo, Porter and McRoberts (1977) and their colleagues based on the 1971 Canada Census (Manpower and Immigration, 1971). This system offers a way of aggregating many specific occupational titles into relatively coherent groups and provides a practical basis for comparing trends in such groups over time. The system has been used by many subsequent labour force researchers. In particular, Clement and Myles (1994) used it in their 1982 national survey and we have used it in comparable 1998, 2004, 2010 and 2016 national surveys.[1] Of course, many new specific occupations (most notably in information technology) have emerged over this period but most of these can be classified within the same categories. Table 1 summarizes compositional changes over the 1971-2016 period for all professionals (including established professionals, semi-professionals and technicians), skilled trades, managers (including upper and middle managers as well as supervisors and forepersons), and the remainder of the labour force (including skilled, semi-skilled and unskilled levels of clerical sales and service occupations, semi-skilled and unskilled manual occupations, and farmers and farm labourers).

Table 1 Professionals, Skilled Trades and Managerial Occupations as Proportions of the Employed Labour Force, Canada, 1982-2016

Occupation	1971 (%)	1982 (%)	1998 (%)	2004 (%)	2010 (%)	2016 (%)
Professional	14.0	15.7	21.4	23.9	27.9	24.6
Skilled trades	11.9	11.3	8.3	10.3	7.8	6.3
Manager	13.6	10.7	14.3	21.7	18.7	24.2
Other	60.6	62.3	56.0	44.1	45.6	46.1
Total	100	100	100	100	100	100
N	7.9 mill.	1758	958	5733	1256	2979

Sources: Pineo, Porter and McRoberts (1977) 1971; CCS 1982; NALL 1998; WALL I 2004, WALL II 2010; CWKE 2016.

At this level of aggregation, the most evident changes are increases in both managerial occupations and professional occupations, both from around 14 percent to nearly a quarter of the entire labour force. Skilled trades have declined from about 12 percent to 6 percent of the labour force. These shifts over a 45-year period are consistent with the general notion of an emerging knowledge economy

[1] The 1971 data used in this paper are based on the 1971 census population while data for later years are based on sample surveys.

increasingly dominated by professional and managerial occupations as well as the decline of manufacturing reliant on skilled trades.

When we look more closely at the composition of professional occupations over this period, another shift is apparent. As Table 2 shows, the proportion of professionals in well-established occupations has declined from the majority to a minority, while semi-professions have become the majority of all professionals. This trend is reflective of growth of occupations dealing with complex systems of information and the growth of post-secondary education programs to train and certify people in these fields.

Table 2 Types of Professional Occupations, Employed Labour Force, Canada, 1971-2016 (%)

Type	1971	1982	1998	2004	2010	2016
Established profession	59	52	51	36	45	35
Semi-professional	29	36	42	50	45	56
Technician	12	12	7	14	10	8
Total	100	100	100	100	100	100

Sources: Pineo, Porter and McRoberts (1977) 1971; CCS 1982; NALL 1998; WALL I 2004, WALL II 2010; CWKE 2016.

It should be noted here that the composition of managerial occupations has also shifted over this period. Upper and middle managerial occupations increased from a minority to the majority of all managerial-supervisory occupations, while supervisors and forepersons declined from majority to minority proportions. There has probably been inflation of managerial titles, but this change suggests both decline of close personal supervision of non-managerial workers and expansion of more centralized managerial functions such as surveillance.

As indicated above, the standard criteria for establishing professional status have been an advanced academic training program in the field, membership in an organization representing the interests of the occupation and licencing to practice. The 1982 to 2016 national surveys provide general estimates for each of these criteria, with the provisos that the measure of post-secondary educational requirement may not be very field-specific, organizational membership may include associations and unions, and types of certification may also be quite varied.

Profiles for established professionals, semi-professionals, technicians and for all professionals aggregated, as well as for skilled trades are summarized in Table 3. Skilled clerical, sales and service workers are also included in this table as a benchmark for the most highly skilled occupations besides professionals and skilled trades in the non-managerial labour force.

Table 3 Profiles of Criteria for Professional Status by Non-managerial Occupational Group, Canada, 1982-2016 (%)

Occupation Group	**Post-sec required**					**Org mem**			**Certified**			
	1982	1998	2004	2010	2016	2004	2010	2016	1998	2004	2010	2016
Professional	91	76	84	91	88	65	72	55	65	59	72	65
Semi-prof	72	72	75	83	78	55	66	50	45	45	50	45
Technician	70	79	80	81	85	53	58	60	57	57	64	61
All professional	81	76	74	86	82	59	58	61	64	52	61	53
Skilled trades	21	35	29	44	43	54	50	54	61	62	67	60
Skilled clerical+	24	44	51	49	52	39	39	33	23	35	33	25
Other non-managerial	8	18	21	28	30	43	46	33	24	38	43	37
Total labour force	28	42	42	55	56	45	52	39	35	41	48	40

Sources: CCS 1982; NALL 1998; WALL I 2004, WALL II 2010; CWKE 2016.

Since 1982, the proportion of jobs requiring completion of either university or college programs has doubled, from 28 percent to 56 percent. Professionals have remained distinct from the rest of the non-managerial labour force with the vast majority requiring completion of a specialized post-secondary training program. A growing proportion of skilled trades obtain part of their training through college programs but on-the-job apprenticeships still prevail. Some form of post-secondary credential is increasingly required for job entry by skilled clerical workers as well as the rest of the labour force but the credential is rarely field-specific. However, the gap between professionals and other non-managerial employees in advanced forms of education is clearly closing.

With regard to membership in organizations representing one's occupational field, data for association membership are only available since 2004. A majority of professionals have been members of either professional associations or trade unions or both through the 2004-2016 period. This contrasts with declining minority membership in such organizations for most of the rest of the non-managerial labour force through this period. A majority of the declining numbers of skilled trades continue to be members of trade unions. But professionals are now the most highly organized and growing part of the non-managerial labour force.

The imposition of a licencing requirement to permit practicing is perhaps the strongest criterion for the recognition of occupational knowledge. Once again, the majority of professionals require licencing to practice in their field. The same remains true of skilled trades. Professionals and skilled trades remain distinctive in this regard.

These general profiles indicate that, in one of the most highly educated labour forces in the world, professional occupations are now accessible almost exclusively through advanced specialized training programs, and professionals along with the declining numbers of skilled trades are the most highly organized and fully licenced parts of the labour force. Of course, not all those in any given occupation meet all of these criteria for professional status and blurring with skilled trades persists. While the "professionalization of everyone" (Wilensky, 1964) is clearly not happening, a growing minority of the entire labour force is attaining a professional status.

This apparent professionalizing trend is occurring in a general employed labour force that is gradually more female, and more rapidly becoming more non-white and aging. According to these surveys, between 1982 and 2016 females increase from around 40 percent to nearly half of the employed labour force, non-whites increased from about 6 percent to around 18 percent, and the proportion of the employed over 50 years of age grew from under 20 percent to around one-third. The proportion of all jobs that required use of a computer grew quickly from under 40 percent in the late 1980s to near universality in recent years. There has also been more reliance in Canada as elsewhere on temporary jobs, with an overall increase from around 10 percent of the employed labour force in 1982 to over 15 percent in 2016. Temporary status prevails especially in the most recently created jobs (see Katz and Krueger, 2016).

Changing Class Structure and Development of Professional Classes

As the evidence in the prior section suggests, those in many professional occupational groups have been able to gain substantial control over access to specialized training programs and development of a complex codified field of knowledge to effectively enclose such fields of occupational practice. But most prior research on professional occupations has largely ignored important aspects of underlying class relations of workplace power that heavily influence any given profession's capacity to gain recognition and reward for specialized knowledge. As Terence Johnson (1977) observed in a largely ignored earlier contribution on the subject, those in professional occupations in advanced capitalist societies may play primarily a part of the global ownership and managerial functions of capital, or be primarily part of collective labour in a complex co-operative labour process, or be a combination of both. Professional occupational categories *per se* do not reveal the *class positions of professionals* without further examination of their relations in the production process.

Recent research on classes in contemporary capitalist societies in terms of production relations has suggested several different class positions: (1) ownership classes of a capitalist bourgeoise and a petty bourgeoise of self-employed; (2) a traditional working class of wage labourers; as well as (3) intermediate class positions combining capitalist managerial functions and specialized collective labour roles. Two particular intermediate class positions have commonly been distinguished (see Wright, 2005): "managers" who exercise some of the powers of capital, hiring and firing workers and making specific production process decisions; and "professional employees" whose specialized skills and credentials confer semi-autonomous power over aspects of their own jobs. We suggest that ``managers`` are indeed intermediate as hired employees who control and coordinate other employees on behalf of enterprise owners. But professional employees are clearly part of the collective labour process and mainly distinguishable from some other non-managerial hired labour by the extent of their claims to specialized knowledge.

So, beyond the conventional features used to identify professional occupations, other *class-based* distinctions should be made among professionals in order to understand their differential capacities to exercise power and have their specialized knowledge claims widely recognized. We suggest that there are now four basic types of professional classes: *professional employers; self-employed professionals; professional managers; professional employees* (see Livingstone, 2014):

- *Professional employers* own either large or small enterprises and possess ultimate control over their own work and the goals of the organization, and managerial prerogative over hired workers, subject mainly to environmental contingencies.
- *Self-employed professionals* without employees have ultimate control of their own work, although they may now contract themselves to larger enterprises at times.
- *Professional managers* without the privilege of ownership, lack the power of complete control over the collective goals or command of their organization but do possess a relatively high level of decision-making control within the organization compared with professional employees.
- *Professional employees'* relatively high level of specialized knowledge to perform the job makes them more secure and difficult to replace than m ost other non-managerial employees; but they still remain vulnerable as sellers of labour without control over the final product/service.

Much of the recent research on the general changing class structure of advanced capitalist economies on the one hand and changing production relations within paid workplaces on the other hand has tended to ignore the connection between them (Carter, 1995; Neilson, 2007). In prior research, we have suggested a convergent model of economic classes grounded in production relations. These employment classes include: corporate capitalists, large employers, small employers, self-employed, managers, supervisors, professional employees, service workers and industrial workers. A general discussion of this model and application to the Canadian labour force using the 1982-2010 national surveys referred to above may be found in Livingstone and Scholtz (2016). For purposes of this paper, the most important points to register are:

- Owners, including tiny numbers of large and small employers as well as larger numbers of self-employed, all of whom control their own businesses, continued to make up around 15 percent of the employed labour force;
- Managerial employees increased relatively quickly as a proportion of the labour force while supervisory employees did not;
- Professionals who are employees became one of the largest of these employment class groups, as well as the most highly organized;
- The traditional working class of industrial workers and service workers who mainly provide their labour without specialized requirements declined from a majority to a minority of the entire employed labour force.

Table 4 summarizes the general class structure of the employed labour force from 1982 to 2016, with some refinements beyond the previously published 1982-2010 analysis. Owners continue to make up around 15 percent of the employed labour force. Managerial employees have continued to grow overall, now approaching a quarter of the labour force. In addition to upper managers who control a plant, branch or division of an entire organization, this includes middle managers, supervisors and forepersons, and also professional managers who first identify with their professional occupation and then indicate they also play a managerial role. Middle managers appear to have increased the most, now making up nearly half of all managerial employees while professional managers may also have increased.

Among non-managerial employees, the growing number of professional employees may now outnumber declining industrial workers at around 20 percent of the employed labour force. Clerical, sales and service workers have declined somewhat since the 1980s but still make up around a quarter of the employed labour force. Overall, non-managerial employees have declined from almost three-quarters to around 60 percent of the employed labour force. Ownership and managerial functions now involve around 40 percent of the employed labour force while a growing portion of the non-managerial majority of employees is assuming a professional status.

Table 4 Class Distribution, Employed Labour Force, Canada, 1982-2016 (%)

General class location	**Employment class**	**1982**	**1998**	**2004**	**2010**	**2016**
Owners						
	Corporate capitalists	<.1	<.1	<.1	<.1	<.1
	Large employer	.6	2.7	1.1	.3	.6
	Small employer	2.1	3.7	4.6	4.2	3.1
	Self-employed	12.6	9.0	13.1	12.3	10.5
	All owners	15.3	15.0	18.8	16.8	14.2
Managerial						
	Upper manager	1.9	5.4	4.0	4.7	4.1
	Middle manager	2.5	2.5	7.2	7.3	11.4
	Supervisor	4.1	5.5	5.7	4.9	5.0
	Professional manager	1.6	1.7	3.7	5.6	3.0
	All managerial	10.1	15.1	20.6	22.5	23.5
Non-managerial						
	Professional employee	11.9	16.4	16.3	19.6	19.2

	Service worker	32.8	26.4	21.7	23.1	25.2
	Industrial worker	29.9	26.6	22.7	17.8	17.9
	All non-managerial	74.6	69.4	60.7	60.5	62.3
	Employed N	1758	873	5570	1192	2881

Sources: CCS 1982; NALL 1998; WALL I 2004, WALL II 2010; CWKE 2016.

If we look more closely at the class distribution of professional occupations, comparable patterns are found. As Table 5 indicates, during this period of expansion of professional occupations as a portion of the labour force, professional employers and self-employed professional business owners have remained at around 15 percent of all professional occupations, very similar to the proportion of owners in the general labour force. The proportion of all owners with claims to specialized professional knowledge grew and thereby enhanced their managerial prerogatives. Both the proportion of the labour force who were managers and the proportion of managers who were professionals grew significantly, creating a greater presence of managers with claims to professional specialized knowledge. Conversely, the decreasing majority who remained professional employees became more vulnerable to overarching direct control or influence by professional employers and professional managers. Most professionals have remained in the employee class but increasing proportions are being directed by managers. In 1982, around two-thirds of professional employees said they reported to a manager who directs their work; in 2016, the proportion was 86 percent. More generally, as the managerial class increases as a proportion of the labour force, all non-managerial workers are increasingly subject to their direction. More managers are also managed. In 1982, about one-third of all managers had no one above them to whom they were required to report; in 2016, the proportion had declined to around 10 percent. So, more lower level managers are subordinated to upper level managers while professional employees and other workers are increasingly controlled through the managerial hierarchy.

Table 5 Distribution of Professional Classes, Canada, 1982-2016 (%)

Professional Class	1982	1998	2004	2010	2016
Employer	2	5	5	2	2
Self-employed	14	15	13	14	11
Manager	11	10	14	21	26
Employee	73	68	63	63	61
N	242	191	1173	314	741

Sources: Livingstone (2014); CWKE 2016

All of these professional classes are embedded within the more general employment class structure. Professional employers typically run small businesses and continue to contribute their labour to the development of these enterprises. Self-employed professionals work on their own account dependent largely on their own specialized knowledge. Professional managers oversee the work of most other non-managerial hired labour. Professional employees are now a growing component of the non-managerial labour force. The treatment by some class analysts of professional employees as a distinctive *intermediate* form of semi-autonomous labour may reflect the current strategic import of their sorts of specialized knowledge within emergent "knowledge economies", but it obscures their general status as non-managerial hired labour. All of these professional classes are now growing minority components within more general employment classes.

Specific institutional histories of various professions differ considerably and those within any given professional occupation in a given society will likely share some common employment interests. Some analysts of occupational classes argue that such "micro classes" are the basic elements of coherent classes in contemporary societies (e.g. Grusky and Weeden, 2001). But we suggest that professional classes with different workplace powers are likely to have different views on various working conditions and attitudes about economic issues—however limited their self-consciousness may be. We have argued elsewhere that professional employees have a potentially pivotal role in the further development of advanced capitalist "knowledge economies" (Livingstone 2015). The data in the current series of national surveys permit an exploration of the changing relationships of professional employees with working conditions and attitudes about economic issues, as well as comparisons with other employment classes.

Professional Employees' Changing Working Conditions

We will draw on this series of national surveys to estimate changes in discretionary control of one`s own work tasks, extent of involvement in organizational decision-making, as well as recognition of skills of professional employees and other non-managerial employees. Comparisons will be made for professional employees on the one hand with upper managers, the employees who have had the greatest control of the labour process, and on the other hand with service workers and industrial workers who have historically been the majority of hired labour and most excluded from such control.[2]

Table 6 summarizes the extent to which different employee classes have perceived that they can plan and design their own work. The vast majority of upper managers continue to perceive a high level of discretion, perhaps with some decline as the managerial hierarchy has expanded greatly. Conversely, the proportion of service worker and industrial workers who see themselves as having discretion to design their own work has increased since 1982, perhaps reflective of greater mediating roles for them in increasingly automated labour processes. Among professional employees, the sense of being able to design their own jobs declined from strong majority proportions comparable with managers to numbers similar to service workers and industrial workers. In this aspect of workplace power, all non-managerial employees are becoming less distinguishable.

Table 6 Plan or design own work ``all or most of time``, Canadian wage and salary employees, 1982-2016 (%)

Employee class	**1982**	**2004**	**2010**	**2016**	**1982-2016 change**
Upper Manager	97	85	72	81	-16
Professional employee	75	61	65	54	-21
Service worker	30	44	48	48	+18
Industrial worker	29	48	46	45	+16
Overall ave.	43	56	58	54	+11
N (all employees)	1484	4501	978	2401	

Sources: CCS 1982; WALL I 2004, WALL II 2010; CWKE 2016.

Over the period of these surveys, there has been a great deal of managerial rhetoric about greater worker involvement in "learning organizations" and encouragement for all employees to share their knowledge for the greater good of enhancing organizational productivity. As previously noted, professional employees have

[2] It should be noted that lower level managers, supervisors and forepersons are included in the following tables only in the overall averages. These groups are located marginally in relations between capital and labour, and their working conditions and economic attitudes may generally be posited as intermediate.

been centrally targeted to share their specialized knowledge through involvement in organizational decision-making on strategic issues (e.g. Drucker, 1998). Prior research has found that actual practices of greater involvement have been severely constrained (Harley 1999; Osterman 2000). Table 7 suggests that the reality for most professional employees has indeed been quite limited. Virtually all upper managers have been involved in strategic decision-making throughout this period (as have most lower managers). The majority of service workers and industrial workers have remained excluded, but there may have been some increase in consultation in transitions to more complex automated labour processes. In spite of managerial intent to increasingly `capture` professional employees` specialized knowledge, their involvement in organizational decision-making has continued to include only a minority and may now be decreasing. Once more, their extent of control in the labour process is becoming subjectively indistinguishable from that of other non-managerial employees.

Table 7 Participation in organizational decision-making (about products, hiring and firing, budgets, workload, changing procedures), Canadian wage and salary employees, 1982-2016 (%)

Employee class	1982	2004	2010	2016	1882-2016 change
Upper manager	97	96	98	92	-5
Professional employee	42	49	42	28	-14
Service worker	20	39	41	27	+7
Industrial worker	11	40	36	27	+16
Overall ave.	25	50	50	37	+12
N	1481	4369	930	2386	

Sources: CCS 1982; WALL I 2004, WALL II 2010; CWKE 2016.

The extent to which employees feel their skills are being recognized in their jobs is an important indicator of how effectively the productive capability of the labour force is being utilized. In the context of rapidly increasing educational attainment of the labour force, there has been a general trend toward greater underutilization (a.k.a. as underemployment or overqualification). This trend has been documented fairly extensively in Canada (Livingstone 2009). Table 8 summarizes changes by employment class.

Table 8 Proportion who feel they are overqualified for their current job, Canadian wage and salary employees, 1982-2016 (%)

Employee class	1998	2004	2010	2016	1882-2016 change
Upper manager	23	14	14	25	+2
Professional employee	12	22	25	30	+18
Service worker	31	34	32	43	+12
Industrial worker	21	29	37	25	+4
Overall ave.	23	27	30	36	+13
N	718	4523	980	2408	

Sources: NALL 1998; WALL I 2004, WALL II 2010; CWKE 2016.

For employees in general, since 1998 there has been an increase in the proportion who feel they are overqualified for their job, from 23 percent to 36 percent. There is no discernible trend for upper managers, who are often selected on allegiance as well as merit. Among other employees, the most notable changes are for service workers and professional employees. Service worker jobs remain most numerous and most accessible, with increasing numbers of people with post-secondary education taking increasing numbers of temporary positions; over 40 percent now feel overqualified for such jobs. Professional employees` jobs are more closely related to specialized knowledge requirements but their sense of overqualification has increased most substantially over this period, from around 10 percent to 30 percent. In this aspect of working conditions as well, professional employees are becoming less distinguishable from other non-managerial employees. We can also note here that, in spite of rapid increase in computerization of jobs, under-employment of computer skills also remains very widespread among professional employees and the non-managerial labour force generally.

In sum, at least in terms of these subjectively-perceived working conditions, professional employees have been becoming less like managers and more like other non-managerial employees in recent times.

Professional Employees' Economic Attitudes

Whatever changes may be occurring in employees` working conditions, their general attitudes about working conditions are also consequential for assessing prospects for change, including collective actions to maintain or improve such conditions. We will touch on just three issues here: support for workers` right to strike, belief in the profit motive and subjective class identity.

The capacity to withhold their labour to negotiate for more tolerable working conditions is the most basic right of hired workers in capitalist economies. The right to strike has been central to the sustainability of labour. Support for the right to strike has been assessed in all these surveys by extent of agreement with the statement: 'Management should not be allowed to hire replacement workers during a strike'. As Table 9 shows, the majority of upper managers have remained consistent in supporting using replacement workers to meet production requirements. In contrast, about two-thirds of both professional employees and industrial workers were opposed to the hiring of 'scab' workers in both 1982 and 2016. Majorities in all non-managerial employment classes have remained opposed to using replacement workers throughout this period.

Table 9 Opposition to strike-breaking, Canadian wage and salary employees, 1982-2016 (%)

Employee class	1982	2004	2010	2016	1982-2016 change
Upper Manager	34	36	45	32	-2
Professional employee	68	57	68	68	0
Service worker	65	55	60	61	-4
Industrial worker	71	60	53	67	-4
Overall ave.	66	55	54	60	-6
N (all employees)	1451	2233	959	2254	

Sources: CCS 1982; WALL I 2004, WALL II 2010; CWKE 2016.

A central belief in all capitalist societies is that the profit motive is essential to effective operation of modern economies. The extent to which this belief is rejected may be indicative of potential support for movement toward an economy based on alternative principles. Since the 1980s, growing economic inequalities and increasing evidence of environmental degradation have provoked increased public questioning of the sustainability of current capitalist economies and by implication the viability of the profit motive. Table 10 summarizes support for the profit motive by different employment classes over this period.[3] Upper managers have remained the strongest defenders of the profit motive but their support has

[3] The question in all these surveys was: "It is possible for a modern economy to run effectively without the profit motive". In addition to agree and disagree options, the later surveys had a middle "neither" option. The small numbers in this category have been omitted in this table for comparability.

declined significantly. All non-managerial classes, including professional employees, have been weaker defenders of the profit motive throughout this period and around half may now be open to *considering* economic alternatives.

Table 11 Possibility of modern economy to run effectively without the profit motive, Canadian wage and salary employees, 1982-2016 (% disagree)

Employee class	1982	2010	2016	1982-2016 change
Upper Manager	91	73	61	-30
Professional employee	67	49	52	-15
Service worker	62	55	48	-14
Industrial worker	58	41	52	-6
Overall ave.	63	55	54	
N (all employees)	1453	967	1832	

Sources: CCS 1982; WALL II 2010; CWKE 2016.

Those who identify as ‘working class’ are defining themselves positively as people who labour to produce necessary goods and services, and more negatively as workers subordinated to others in employment or living conditions and disadvantaged compared to those with greater wealth or income. Table 11 summarizes the basic patterns of working class identity by employment class. Overall, the proportion of the hired labour force identifying as working class (or in very few cases, “lower class”) was nearly 40 percent in 1982 and declined to under 20 percent by 2016. The highest incidence of working class identity was among industrial workers at about 50 percent in 1982, but this declined to under 30 percent in 2016, now about the same level as service workers. Professional employees have been consistently as reluctant as upper managers to take working class identities, now around 10 percent, and remain more likely than other non-managerial workers to identify as ``upper middle class``. Among all employment classes, the dominant trend during 1982–2016 has been for more to see themselves as ‘middle class’.

Table 11 Identify as ``working class`` (or lower class), Canadian wage and salary employees, 1982-2016 (%)

Employee class	1982	1998	2004	2010	2016	1982-2016 change
Upper Manager	13	11	17	7	8	-5
Professional employee	13	14	24	8	11	-2
Service worker	33	30	38	23	28	-5
Industrial worker	51	31	42	29	27	-24
Overall ave.	34	22	30	17	16	-18
N (all employees)	682	711	4420	962	2400	

Sources: CCS 1982; NALL 1998; WALL I 2004, WALL II 2010; CWKE 2016.

The economic polarization that has occurred during this period has made both the very rich and the very poor more visible, thereby provoking more people to recognized some above and more below them. This has been almost as true of steelworkers as professional employees (e.g. Seccombe and Livingstone 1999). The dominant trend to increasing middle class identity is probably also associated with increasing levels of mass consumption (Curtis 2013) as well as increasingly pervasive ideological inducements to think of one's class position in terms of consumption patterns. It may also be reflective of the declining numbers in traditional working class positions, as well as a tendency to associate increasing educational attainments with higher economic status. In any event, there is currently both a declining traditional working class and declining working class identity in the employed Canadian labour force.

Overall, these findings on economic attitudes suggest that non-managerial employees generally have retained strong support for their right to strike and expressed weakening belief in the necessity of the profit motive during this period. There has also been a generally widening assumption of middle-class identity. Professional employees' economic attitudes have become increasingly similar to other non-managerial employees. Taking a middle-class identity does not prevent either professional employees or other non-managerial workers from increasingly sharing progressive economic attitudes. All of these findings require further analyses with various mediating variables (e.g. union and association membership, gender, age, ethnicity, immigration status, public-private sector, organizational size) and other attitudes. But at this stage, at least a few possible implications can be suggested.

Concluding Remarks

Professional occupations originated in close allegiance with ruling classes in the earliest historical societies, largely to develop and maintain forms of specialized knowledge needed to ensure the social order. In the process of industrialization during recent centuries, numerous new professions developed expert knowledge and organizational power to aid in providing more widely needed goods and services and thereby achieved somewhat more independent occupational status (e.g. Perkin, 1989). In emergent "knowledge economies" such as Canada, professional occupations are a growing proportion of the employed labour force. While those in any specific professional occupation continue to share origins in specialized training, they also have different class interests as professional owners, self-employed professionals, professional managers and professional employees. The hired labour force is becoming dominated by managers, and professional managers are becoming an increasing proportion of professionals. But professional employees remain the majority of all professionals and a growing part of the non-managerial labour force. Their working conditions and economic attitudes are becoming very similar to those of the rest of the non-managerial labour force. *In many respects, professional employees may be considered the skilled trades of the "knowledge economy"*. While skilled trades themselves are now declining as a portion of the labour force, they were the most highly qualified part of the hired labour force in late 19th century and led the organization of the labour movement for much of the 20th century. Professional employees are now the most highly qualified part of the current labour force and already the most highly organized within their own fields (Livingstone and Raykov, 2014). A central question for the further development of "knowledge economies" is whether professional employees will continue to give their allegiances narrowly to their specialized fields and aspire to "upper middle class" identities and diminishing relative advantages within established work organizations. Or will professional employees increasingly recognize their common interests with other non-managerial hired workers and play a more strategic role in the mobilization of a labour movement for more sustainable economic alternatives in the current century?

References

Adams, T. (2010). Profession: A useful concept for sociological analysis? *Canadian Review of Sociology, 47*(1), 49-70.

Carter B (1995) A growing divide: Marxist class analysis and the labour process. *Capital & Class* **19**(**1**): 33–72.

Clement, W., & Myles, J. (1994). *Relations of ruling: Class and gender in post-industrial societies*. Montreal: McGill-Queen's University Press.

Curtis J (2013) "Middle class identity in the modern world: How politics and economics matter". *Canadian Review of Sociology* **50**(**2**): 203–226.

Drucker, P. (1998). *Peter Drucker on the Profession of Management.* Cambridge: Harvard University Press.

Grusky, D. and K. Weeden. "Decomposition Without Death: A Research Agenda for a New Class Analysis". *Acta Sociologica*. 44(2001): 203-218.

Harley, B. "The Myth of Empowerment." *Work, Employment & Society* 13.1 (1999): 41–66.

Johnson, T. (1977). The professions in the class structure. In N.R. Scase (ed.). *Industrial Society: Class, Cleavage and Control*. (pp. 93-110). London: Allen & Unwin.

Katz, L. and A. Krueger. (2016). *The Rise and Nature of Alternative Work Arrangements in the United States, 1995-2015.* WORKING PAPER #603 PRINCETON UNIVERSITY INDUSTRIAL RELATIONS SECTION SEPTEMBER 2016 http://arks.princeton.edu/ark:/88435/dsp01zs25xb933r

Livingstone, D. W. "Exploring the Icebergs of Adult Learning: Findings of the First Canadian Survey of Informal Learning Practices" *Canadian Journal for the Study of Adult Education* 13,2 (November 1999): 49-72.

Livingstone, D. W. (ed.) *Education and Jobs: Exploring the Gaps*. Toronto: University of Toronto Press, 2009.

D.W. Livingstone. (2012). "Probing the Icebergs of Adult Learning: Comparative Findings and Implications of the 1998, 2004 and 2010 Canadian Surveys of Formal and Informal Learning Practices". *Canadian Journal for the Study of Adult Education*. 25, 1(November): 47-71.

Livingstone, D. W. "Interrogating Professional Power and Recognition of Specialized Knowledge: A Class Analysis" *European Journal for Research on the Education and Learning of Adults.* 5, 1 (2014): 13-29.

Livingstone, D.W. "The Pivotal Role of Professional Employees in Emergent 'Knowledge Economies': Some Thoughts on the 'Innermost Secret' of

Advanced Capitalism" *Proceedings of the 9th International Conference on Researching Work & Learning*, 8–12 December 2015, Singapore. www.rwl2015.com/papers.004

Livingstone, D. W. and M. Raykov. "Interest in Unions and Associations in a Knowledge-Based Economy: Canadian Evidence". *Just Labour*. 22 (Autumn 2014): 3-23.

Livingstone, D. W. and M. Raykov. ``The Growing Gap Between Post-Secondary Schooling and Further Education: Findings of 1998, 2004, 2010, and 2016 Surveys of the Employed Canadian Labour Force``. *The Canadian Journal for the Study of Adult Education. 28,* 2 (June 2016): 1-23. *ISSN1925-993X (online) www.casae-aceea.ca*

Livingstone, D. W. and A. Scholtz. "Reconnecting Class and Production Relations in an Advanced Capitalist 'Knowledge Economy': Changing Class Structure and Class Consciousness". *Capital & Class*.40, 3 (2016): 469-93.

National Initiative for Cybersecurity Education. *A historical review of how occupations become professions*. Washington, D.C.: Department of Homeland Security. White Paper Version 1.0. October 04, 2012. Downloaded March 31, 2017 from csrc.nist.gov/.../a_historical_view_of_how_occupations_become_professions_100312

Neilson D (2007) Formal and real subordination and the contemporary proletariat: Re-coupling Marxist class theory and labour-process analysis. *Capital & Class* **31**(**1**): 89–123.

Osterman, P. "Work organization in an era of restructuring: Trends in diffusion and effects on employee welfare". *Industrial and Labor Relations Review*. 53, 2 (January 2000): 179-196.

Perkin, H. *The Rise of Professional Society: England since 1880*. London: Routledge, 1989.

Pineo, P., J. Porter and H. McRoberts. "The 1971 census and the socioeconomic classification of occupations". *Canadian Review of Sociology and Anthropology*. 14 (1977): 91-102.

Reader, W.J. *Professional Men: The Rise of Professional Classes in Nineteenth Century England*. New York: Basic Books 1966.

Seccombe, W. and D.W. Livingstone. *"Down to Earth People": Beyond Class Reductionism and Post Modernism*. Toronto: Garamond Press, 1999.

Wilensky, H. (1964). "The professionalization of everyone". *American Journal of Sociology*, 70, 11 137-158

Wright, E.O. (Ed.). *Approaches to Class Analysis*. Cambridge, UK: Cambridge University Press. 2005.

Zuboff, S. (1984). *In the Age of the Smart Machine: The Future of Work and Power*. New York: Basic Books, Inc., Publishers.