

# **Professions, Hybrid Professionalism and Internal Stratification:**

## **Evidence on Canadian Engineers**

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### Abstract

Traditionally, professions have been seen to possess considerable internal unity and homogeneity (Larson 1977); however research has identified emerging divisions within professions across organizational roles and demographic characteristics (Freidson 1994; Coburn et al., 1997; Noorderaaf 2013). This paper explores internal stratification and segmentation within professions through a case study of the engineering profession in Canada. It expands on previous research in this area by exploring internal class differences within the engineering profession, and the impact of these differences on professional attitudes and goals. Do professional managers have a different outlook than rank and file members of professions? Or is the major divide between professional owners and employees? Drawing on the Canadian Workplaces in the Knowledge Economy (CWKE) survey of Canadian engineers, I explore differences among engineers in their attitudes to a range of professional issues and concerns by organizational position, class, gender, and race. These data promise to shed new light on stratification within Canadian professions, and their potential impact.

Professions have been important social institutions in Western societies for a century and a half, but recent social change appears to be altering their very nature (Abel 1986; Reed, 1996, 2007; Leicht 2016; Noordegraaf 2015). Liberal professions were traditionally characterized by autonomy, social authority, and unity (Larson 1977; Macdonald 1995; Freidson 1970), but beginning in the 1960s and 1970s, these characteristics were challenged by a confluence of forces (Abel 1986; Freidson 1984; Adams 2016; Reed 1996, 2007). Regulatory challenges and changes reduced professions' power, and loosened restrictions over entry to practice and practice itself (Abel 1986; Adams 2016). These changes expanded professional practice, broadening access to women and minorities, and thereby cracked the façade of professional unity (Abel 1986; Freidson 1994; Leicht and Fennell 1997). Intra-professional divisions grew with expanded

employment in larger, more bureaucratic organizations (Abbott 1991; Freidson 1984). Professionals increasingly work in multi-professional environments, and are divided from each other at competing firms; some professionals are placed in positions of power over others (Abbott 1991; Leicht and Fennell 1997). Stratification within professions appears to be on the rise (Abel 1986; Freidson 1984; Waring 2014; Noordegraaf 2013).

The changing structure of organizations employing professionals exacerbates these trends. As Adler et al. (2008: 360) succinctly explain, “professionals increasingly work in organizations rather than in solo practice, and these organizations increasingly take a hierarchical form and have come under increasing market pressure.” As a result, professionals are subject to bureaucratic control now more than ever (Ackroyd 1996; Leicht and Fennell 1997). Some contend that rank and file professionals face proletarianization: They may become indistinguishable from the more general mass of workers in capitalist economies (Ritzer and Walczak 1988; Haug 1975; Larson 1980; Coburn 1994). At the same time, new organizational professions arise (Reed 1996; Muzio and Kirkpatrick 2011). New organizational professions, and professionals who move into management positions, may enjoy considerable influence. Nevertheless, their power stems less from their membership in a regulated profession, than from their organizational position (Reed 1996; Muzio and Kirkpatrick 2011). As a result, professionals who become managers may “shed the professional identification with which they began their careers” (Ackroyd 1996: 606). Rather than identifying with the rank-and-file professionals they manage, they may identify more with their employers and clients (Freidson 1984; Dinovitzer et al.; McGivern et al., 2015). The result is “restratification” within professions (Freidson 1984), and, potentially, “diversification of professional interests” (Leicht and Fennell 1997: 221).

These developments have garnered scholarly attention, with researchers arguing that the development of hybrid managerial/professional roles may be changing the very meaning of professionalism (Noordegraaf 2007; Leicht and Fennell 1997). Increasing division within professions has the potential to transform them entirely, as it may undermine professional unity, long seen as a key source of professional power (Larson 1977; Freidson 2001; Waring 2014). In the 1990s, several scholars identified these trends, but most felt that professional power was resilient enough to adapt to these organizational challenges (Coburn 1994; Abbott 1991; Freidson 1984; Lipartito and Miranti 1998). More recently, however, evidence of internal division and stratification within professions has been mounting (Waring 2014; Noordegraaf 2013), renewing questions about the fate of professional power and unity in Western societies.

This paper sheds new light on stratification within Canadian professions through a case study of the engineering profession in Ontario. Analysing provincial survey data on the professional attitudes and working conditions of Ontario engineers, I examine whether professional engineers in management positions differ from rank and file practitioners respecting their attitudes. Do professional managers abandon professional values for a corporate ethos? Do they differ from rank and file engineers on key professional issues? Moreover, I consider whether other potential sources of division and stratification within professions are more significant, specifically gender, class, and race. Are these somewhat neglected dimensions more important sources of division than organizational position? For some scholars, engineers have been emblematic of modern organizational professions, able to maintain occupational coherence and professional identity, despite many forces dividing practitioners (Abbott 1991: 32; Lipartito and Miranti 1998); however, recent organizational change may finally undermine this fragile unity.

## Professionals in Organizations

The classic image of a nineteenth or early twentieth century professional is the private practitioner, serving clients or treating patients from his office, which might very well be located in his family home. The professional man was linked to a broader community of professionals through loose networks of consultation, social interaction, and membership in professional associations. Professionals were self-employed and autonomous, but they were guided by informal oversight from their colleagues, as well as oaths promising to uphold professional standards and practise according to ethical codes. This classic image is somewhat apocryphal; by the late nineteenth and early twentieth centuries many professionals, including lawyers, engineers, and doctors worked in organizations. Nonetheless, their employment conditions were typically better than most other workers. Even in organizations, many professionals exercised considerable control over their own work.<sup>i</sup>

By the late twentieth century, employment was the norm for most professional groups. This raised concerns. Could regulated professionals uphold their legal responsibility to act in the public interest if they were employed by private interests seeking profit? Even employment in public sector organizations could be problematic if bureaucratic authority structures impinged on professional autonomy and prized rationality over people. Scholarly research initially allayed these fears, finding that organizations employing professionals were structured differently than other organizations (Bucher and Stelling 1969; Mintzberg 1983; Brock 2006). Bucher and Stelling (1969) argued that “professional organizations” were generally neither bureaucratic nor hierarchical. Professionals exercised autonomy, and in fact often defined their own roles within organizations. Professionals determined their own working conditions. Decision-making was rarely top-down; instead strategic directions were determined through negotiation and

consultation. Thus, professionals in organizations were not managed like other employees (see also, Freidson 1984).

Many professionals were employed in smaller organizations, such as professional partnerships; organizations scholars call this the P2 form (Cooper et al. 1996; Brock 2006). P2 firms shared many similarities with Bucher and Stelling's (1969) professional organization. P2 emphasizes professionalism, democratic and collegial decision-making, limited hierarchy and peer control (Cooper et al. 1996: 626; Empson and Chapman 2006). Partnership is emphasized, such that ownership and governance are shared amongst (at least some) professional partners, and autonomy and independence are valued. P2 firms focus on applying expertise to address clients' needs, and they allow professionals considerable discretion to get the job done (Brock 2006: 159).

Recently, scholars argue, there has been substantial organizational change affecting professions (Cooper et al 1996; Brock 2006; Abbott 1991; Empson and Chapman 2006). Writing in the mid-1990s, Cooper et al. (1996) identified a new organizational archetype: the Managerial Professional Business (MPB). This organizational form is more hierarchical than traditional professional organizations, characterized by independent management (bringing in managers from outside the profession or promoting from within), rationality and profits. The client is no longer an individual with a problem to solve, but a consumer seeking value for money. The MPB form is also associated with increased specialization and division across professionals in a firm (Cooper et al. 1996). Although different organizational forms may co-exist, and new forms need not undermine traditional values (Empson and Chapman 2006), there is a sense that new forms of organization are transforming the professional workplace. Increasingly, "old

professional values are being challenged by new managerial and business approaches” (Brock 2006: 160).

As markets for professional services become more competitive, on both a local and global level, the drive for efficiency, marketing, and business development has increased (Brock 2006; Abbott 1991). Some companies, especially in engineering and architecture have been replacing partnership governance models with corporate governance systems (Brock 2006; Leicht and Fennell 1997). Technological change has facilitated routinization of some professional tasks, and encouraged the use of less-skilled workers to replace professionals in some fields (Brock 2006). At the same time, these trends have, at times, encouraged the routinization of professional work, as professionals are asked to do tasks that less-trained workers might have done in the past (Muzio and Ackroyd 2006). While the traditional professional organization was relatively flat, collegial and collaborative, new organizational forms are increasingly hierarchical and bureaucratic (Brock 2006; Leicht and Fennell 1997), and professional work is managed more closely, whether by professionals assigned to managerial roles (Lipartito and Miranti 1998; McGivern et al. 2015), or managers from outside the profession with their own agendas (Leicht and Fennell 1997; Waring and Currie 2009). New organizational forms are increasingly transnational. Brock and colleagues have identified a new organizational archetype – the Global Professional Network – characterized by “network structures, managerialism, business-like corporate governance, larger size, transnationalism and greater complexity and internal differentiation” (Brock 2006: 164; Brock et al. 1999).

As organizations are increasingly subjected to corporate rationalization, professionals’ autonomy and potentially their power are challenged (Reed 1996). New organizational forms are changing professional practice. These new forms are characterized by more differentiation and

division, less autonomy, more managerial control (whether exerted by peer managers or not), more competition and rationalization, and a different orientation towards clients, patients, and consumers. New organizational forms may result in better and safer service: certainly that is the goal of new public management in health care organizations (Waring and Currie 2009; Kitchener 2000). However, the application of business principles to professional endeavors may also be associated with fraud, professional misbehaviour, and violations of professional ethics. Professionals have been implicated in recent corporate scandals, from the accountants and auditors implicated in the downfall of Arthur Andersen and Enron (Coffee 2006), to the engineer arrested in the Volkswagen emissions scandal (Kasperkevic 2016).<sup>ii</sup>

Another outcome of organizational change within professions has been more internal stratification, which may threaten to undermine professional unity. With increases in specialization and hierarchy within professions, it is not clear to what extent professional practitioners share professional values, goals, and visions about what constitutes ‘good’ professional practice. As Reed (2007) argues, professions may become “internally divided and stratified between an elite group, working more intimately with governmental and corporate elites, and a large group of technical specialists performing increasingly routinized and standardized tasks” (p 172). Muzio and Ackroyd’s (2005) study of large UK law firms, provides some supporting evidence, finding that elite partners in law firms have sought to increase their own profits by hiring large numbers of lawyers to do routine work for them, with little chance for promotion. Internal conflict between elite partners and managers on one side, and rank and file practitioners on the other may be increasing. While the former seek to enhance efficiency or profit at the expense of the latter’s autonomy and quality of work, professional workers are not without recourse, and often resist such infringements when they can (Waring and Currie 2009).

Some professionals are more vulnerable than others, and professionals seeking greater job security and promotion, may have less ability to resist managerial infringements. Research has shown that the vulnerable are more likely to compromise their professional ethics to benefit their employers and clients (Dinovitzer et al. 2013; Parker and Rostain 2012).

To sum up, organizational change appears to be increasing professional divisions, and internal stratification. Practice experiences, professional values, and professional identity may vary by organizational position and role.

### Hybrid professionalism

To capture shifts in professional identity and control with organizational change, scholars have drawn on the concept of “hybrid professionalism” (Noordegraaf 2007, 2014; Correia and Denis 2016). For Noordegraaf (2007, 2014) what it means to be professional is changing in certain organizational contexts, especially in the public domain. Professionalism and managerialism previously represented two different strategies for controlling labour, but in some contexts these modes of control are merging. While traditionally professionalism was thought to represent a logic distinct from the market (Freidson 2001), increasingly professional logics and market logics are merging (Noordegraaf 2015). The result is that professional work increasingly combines “professional and managerial principles” (Noordegraaf 2015: 192). These combinations can be seen particularly amongst professionals who are managers, and managers who are professional, and they create new professional practices and identities (Noordegraaf 2007, 2015). Noordegraaf (2007, 2015) sees these developments as positive: they establish new roles for professionals and enable them to navigate new domains and cope with rising demands, while raising organizational efficiency and providing quality services. However, in his more recent work, Noordegraaf (2015) identifies some limitations of hybrid professionalism, as it

maintains elements of traditional professionalism. He advocates for a move towards “organizing professionalism,” which is “aimed at going beyond hybridity, especially by embedding organizing and organizing roles and capacities within professional action” (Noordegraaf 2015: 201). Here the drive for efficiency becomes not simply an organizational or capitalist imperative, but a professional value as well.

Although Noordegraaf (2007) draws attention to professionals in management positions, there is a sense, especially in his later work, that social change is altering the very nature of professionalism. Thus, all professionals are potentially hybrid professionals or organizing professionals. Nonetheless, most research on hybrid professionalism has focused on professionals in managerial roles, and the impact of these roles on identity. For example, McGivern et al. (2015: 412) define “hybrids” as “professionals engaged in managing professional work, professional colleagues and other staff.” These roles can be challenging because they are “framed by both professional and managerial logics” (Ibid). In the last decade a number of researchers have studied professional hybrids to explore their identities, their work, and their relations with their professional colleagues (Correia and Denis 2016; Joffe and MacKenzie-Davey, 2012; Kippist and Fitzgerald. 2009). This literature shows that organizational change has the potential to create new tensions within professions, but that professional values and identities are nonetheless persistent.

Much of the literature on hybrid professions focuses on medical doctors in clinical director or other leadership positions within hospitals (Correia and Denis 2016; McGivern et al., 2015; Joffe and MacKenzie-Davey, 2012; Kippist and Fitzgerald. 2009; Kitchener 2000). Regulatory change and New Public Management schemes have combined to expand the number of managerial roles open to medical leaders in hospital settings. These hybrid

professional/managers are put in positions of authority over their professional colleagues and required to implement organizational policies and reach institutional targets. Is this a source of division and conflict within professions? Not necessarily. McGivern et al. (2015) show that it is helpful to recognize two types of hybrids (they are likely arrayed along a continuum): ‘incidental hybrids’ and ‘willing hybrids’. Incidental hybrids are professionals thrust into leadership roles for a limited term, and they tend to retain their professional identity. For them, the managerial role is temporary and is simply done in service to the profession (see also Kippist and Fitzgerald, 2009; Joffe and MacKenzie-Davey, 2012). Willing hybrids are professionals who seek out managerial roles as potentially permanent and promising career advancement. Willing hybrids work to manage professionals to meet both professional and managerial goals – for example, to ensure that quality and efficient services are provided to clients at reasonable cost. It is this latter group who more closely represents the hybrid professionals identified by Noordegraaf (2007).

Because they adopt managerial goals, hybrid professionals – especially willing hybrids – may construct professional identities distinct from rank and file professionals. However, there is ample evidence that hybrids may continue to hold professional values, in common with their professional colleagues. For instance, professionals in managerial positions can use their positions of authority to protect professional autonomy, and help their professional colleagues (McGivern et al. 2015; Correia and Denis 2016; Kitchener 2000). At the same time, hybrid managers (especially willing hybrids) may see themselves as curbing the excesses of professionalism, and enhancing professional services, by bringing in managerial principles (McGivern et al. 2015). While the first allegiance of incidental hybrids is definitely to the profession, the allegiance of ‘willing hybrids’ may not be.<sup>iii</sup>

The emergence of hybrid professional/managers has implications for professional unity and stratification. Hybrid professionals may distance themselves from their colleagues and adopt identities that prioritize managerial concerns over professional values, leading to intra-professional divisions and potentially conflicts. The literature, thus far, does not provide extensive evidence of intra-professional conflict between manager/professionals and practising professionals, but differences in identity and values are sometimes evident (McGivern et al. 2015; Waring and Currie 2009). Moreover, there is certainly evidence of professionals resisting and co-opting managerial initiatives, suggesting that the goals and interests of practitioners and their managers are diverging (Muzio and Kirkpatrick 2011; Waring and Currie 2009; Kitchener 2000). With organizational and structural change, rank and file professionals may increasingly hold distinct values and interests from their professional colleagues in positions of authority.

#### Other divisions

Research has identified other sources of stratification and division within professions. In a recent review, Waring (2014) identifies several different kinds of professional elites, each with potential allegiances to actors and institutions outside of professions. Not only are there managerial elites with allegiance to their organizational setting, but political elites who are tied to the political process, corporate elites, knowledge elites tied to research organizations, and governance elites linked with regulatory bodies. Practice elites – those with special expertise or skills – might also emerge. For Waring these are all sources of stratification within professions that could spur division and conflict (see also Freidson 1984).

Others have identified divisions along the lines of nationality, race-ethnicity and gender (Abel 1986; Noordegraaf 2013). In multi-cultural nations like Canada, in which a significant

minority of professionals are foreign-trained, differences in professional values, identities, and practices may emerge. However, Canada's strict guidelines for professional entry ensure that very few foreign-trained professionals can practice without further training, education, or supervised practice experience here in Canada. These latter requirements provide opportunities for professional socialization and may foster shared values. Nonetheless, both the foreign trained and the racially marginalized report experiences of discrimination and disadvantage (Basran and Li 1998; Boateng 2015; Gorman and Kay 2016). These different experiences may foster professional concerns and interests that could become a source of division within professions.

Gender differences within professions are another source of division. Professions are internally sex segregated, and women in male-dominated professions tend to cluster in certain specializations and roles. This sex segregation has been remarkably persistent over time. Women in male-dominated professions report different practice experiences than men, and identify fewer opportunities for promotion (Pierce 1995; Seron et al. 2016; Hinze 1999; Kay, Alarie and Adjei 2016). Gender divisions may be particularly important in professions like engineering, where the percentage of women has been low for some time (Engineers Canada 2012, 2015). Recent research by Seron et al (2016) shows how professional socialization in schooling encourages gender divisions, by steering women into specific engineering roles viewed as more gender appropriate. These early socialization experiences are exacerbated by interaction experiences and discrimination in early work experience, which combine to make women feel unwelcome, especially in certain professional roles. These trends discourage women from staying in the profession, and lead to gender divisions within the profession.

While there is a sizeable literature looking at divisions in professions between elites and rank and file practitioners, and/or between managers and workers, the professions literature has been surprisingly silent on the significance of class. Research provides some hints that it may be important. Reed (1996: 579) argues that organizational and social change is creating “a more polarized distribution of occupational and class rewards within and between class groupings.” Muzio and Ackroyd’s (2005) study of elite law firms is also illuminating. They document law partners’ efforts to enhance profits through altering working conditions and routinizing lawyers work. In so doing, their work suggests a shifting class dynamic, as some professionals exploit others for financial gains. Such analyses are few and far between, however. Other studies simply treat professions as if they form a class of their own, or are interchangeable with the ‘middle class’. Livingstone (2014) has recently argued for greater inclusion of class considerations in studies of professional power. He identifies four professional classes: employers, self-employed, managers, and employees. Over time in Canada, the number of professionals in managerial positions has increased, while the proportion of professionals working as employees has decreased. Moreover, Livingstone (2014) finds differing trends in reported organizational decision-making. While the percentage of managers claiming decision-making power increased between 1982 and 2010, the power claimed by self-employed professionals dropped significantly, while that claimed by professional employees dropped slightly. The implication of Livingstone’s (2014) work is that stratification within professions along class lines not only exists, but may be shifting over time. Further, class divisions – especially between managers and other workers – may be increasingly significant for shaping experiences of professional work, and the distribution of professional power.

Overall, the literature on recent changes to professional employment highlights emerging trends of stratification, by organizational position, gender, race, location of training, and potentially class. Does internal stratification along these lines lead to differing values, attitudes and work experiences? The literature is not clear on this point, although scholars do argue that elites may define their interests as differing from rank and file practitioners (Leicht and Fennell 1997; Waring 2014; Freidson 1984). What are the key sources of division within professions? Is hybrid professionalism the key source of professional division, or are differences by gender, class, and other dimensions more important? Research has tended to look at only some dimensions of stratification, often in single organizational settings. This present study sheds new light on stratification within professions, and its implications for professional unity, through a case study of the Ontario engineering profession.

Engineers are ideal case study subjects. Some may regard engineering as a profession that has long been characterized by division (Abbott 1991). Engineers are found in the public and private sector, in large and small firms, across a variety of industries. Engineering is divided into different streams and specializations (ie. civil, electrical, mechanical, chemical, and so on).<sup>iv</sup> Moreover, it is not uncommon for engineers to move into management as their careers progress, so there are a number of engineers in both professional and managerial roles. Despite these internal divisions, engineers have maintain a fair degree of professional unity (Abbott 1991; Lipartito and Miranti 1998). In Ontario, practitioners share a professional designation, educational training, a regulatory body, a commitment to shared professional ethics and a professional identity (Adams 2007). Engineering in Canada is more unified than in the UK or US, but referring to the latter context, Abbott (1991) argues that the engineering profession

illustrates that a profession can persist despite divisions and organizational employment. Perhaps recent organizational change is undermining professional unity in engineering.

## Methods

Between October 2016 and February 2017, Ontario engineers were invited to participate in an on-line survey respecting their working conditions, professional and educational experiences, and their attitudes on a variety of topics. The survey was hosted by Qualtrics, and ethics approval for the research was obtained from two university research ethics boards. Invitations to participate went out to all members of the Ontario Society of Professional Engineers (OSPE). The survey link was also circulated to other engineers not affiliated with OSPE through a variety of networks and email list serves. Several reminders were sent out to encourage a higher response rate. In total, about 780 engineers answered some parts of the survey, although the entire survey was completed by only 620. The survey was designed to parallel the Changing Workplaces in the New Economy (CWKE) national survey, conducted in 2015-16.

This paper presents only preliminary analyses of the data, in the form of bivariate cross-tabular analyses. To assess stratification in engineering I focus on a few specific dimensions highlighted in the literature: manager / non-manager, professional class, gender, visible minority status, and Canadian versus foreign-trained. The survey had a few different measures of managerial status. For this analysis I used a measure that implies managerial identity: “Do you regard yourself as part of management?” This measure appears to capture hybrid managerial / professional identities better than other measures that ask if participants fill managerial roles.<sup>v</sup> Participant class was measured following Livingstone (2014). Respondents were divided into four classes: employers, self-employed, managers, and professional employees. The gender

question was open-ended, asking participants to provide their gender. All answers corresponded to a gender binary, and hence were recoded as male or female. Visible minority status was determined from a question asking people if they self-identified as a member of a visible minority or not. Lastly, respondents were asked where they received their bachelor's degree in engineering, and responses were coded as "Canada" and "other".

The dependent variables presented here fall into two main groupings. The first is a set of questions touching on professional concerns. The second set of questions address working conditions, particularly autonomy and decision-making authority.

The research questions driving the analysis are as follows:

- 1) Do managers and non-managers differ in their professional concerns and attitudes, and their working conditions?
- 2) To what extent do professional attitudes and working conditions vary by class, gender, minority status, and location of training?

After assessing the extent of difference and stratification within the engineering profession, I discuss the implications for professional unity.

## Results

Before exploring the significance of status and demographics for the engineering profession, it is helpful to provide a brief overview of survey respondent characteristics (see Table 1). As in the profession more generally, most engineer respondents are men: Women compose 19% of survey respondents, and hence are slightly over-represented here since they

make up only about 14% of all Ontario engineers. Twenty-one percent of respondents indicated they considered themselves members of a visible minority, and 17.5 percent of respondents received their engineering bachelor's degree outside of Canada. Just under half of all survey respondents (48%) indicated that they considered themselves management.

**Table 1: Profile of Survey Respondents**

Gender	Male	81.3%
	Female	18.7%
Visible Minority	Yes	20.9
	No	79.1
Country of Degree	Canada	82.5%
	Other	17.5%
Manager	Yes	48%
	No	52%

*Managers and non-managers*

Do professional engineering managers differ from other engineering professionals with respect to their views of the profession and its future directions? Table 2 shows the percentage of managers and other professionals agreeing or strongly agreeing with various statements about their profession.

**Table 2. Agreement with statements about challenges affecting the engineering profession**

	<b>Managers % (N)</b>	<b>Others % (N)</b>	<b>Total % (N)</b>
It's getting harder to find steady work in the Engineering field in Ontario.	<b>46% (121)</b>	<b>55.1% (161)</b>	<b>51.3% ***</b>
There is a shortage of qualified people to fill the engineering jobs available in Ontario.	<b>30% (79)</b>	<b>26% (74)</b>	<b>27.9% **</b>
Globalization is opening up more opportunities for professional engineers	<b>35.8% (94)</b>	<b>25.3 (72)</b>	<b>30.3% **</b>

<b>Those seeking engineering expertise too often employ non-Canadian firms whose work does not meet Ontario standards</b>	<b>27.4% (72)</b>	<b>25.6% (73)</b>	<b>26.4% *</b>
<b>Global competition puts pressure on Canadian companies to lower their standards.</b>	<b>31.6%(83)</b>	<b>42.1% (120)</b>	<b>37% **</b>
<b>It is difficult to balance employer expectations with a commitment to professional ethics.</b>	<b>22.4% (59)</b>	<b>27.3% (78)</b>	<b>25% **</b>
Work-family balance is difficult to achieve in the Engineering field	49.4% (130)	51.5% (147)	50.6%
<b>I consider my engineering degree to have been a good career investment.</b>	<b>94.7% (249)</b>	<b>83.6% (238)</b>	<b>88.9% ***</b>
<b>Total N</b>			<b>548</b>

Bolded rows show statistically significant differences (chi-square): \*\*\* p<.001; \*\* p<.01, \* p<.05

On almost every measure, those who identify as managers differ from other engineers – but only to a degree. Engineers who are not managers are more likely to believe there are fewer opportunities for steady work, and less likely to believe that there are labour market shortages, than managers. Non-managers believe globalization creates fewer opportunities for Ontario engineers, and that business practices lead to the hiring of non-Canadian firms. They are also more likely to fear that global competition is forcing Canadian firms to lower their standards, and that employer expectations might lead them to compromise their professional ethics. While the vast majority of engineers consider their engineering degree to be a good career investment, managers are more likely to do so than non-managers. On all attitude measures, except work-family conflict, statistically significant differences are observed. Nonetheless, the differences on most measures are small in magnitude. These are differences of degree, only. For the most part, members of the two groups have similar opinions on professional issues.

More substantial differences are evident if we consider working conditions between the two groups. Table 3 presents the findings pertaining to autonomy and decision-making authority.

Table 3. **Autonomy and Decision-Making authority (Percent saying “Yes”)**

	<b>Managers % (N)</b>	<b>Others % (N)</b>	<b>Total % (Total N)</b>
Can you decide your own working hours?	<b>74.1% (195)</b>	<b>49.3% (140)</b>	<b>61.2% (547) ***</b>
Do you feel you meaningfully participate in decision making?	<b>72.5% (190)</b>	<b>22.6% (64)</b>	<b>46.6% (545)***</b>

Bolded rows show statistically significant differences (chi-square): \*\*\* p<.001

As Table 3 shows, those who identify as managers are much more likely than other engineers to determine their own working hours, and to participate in decision making. Table 4 demonstrates that engineering managers are more likely than their counterparts to say they can plan their own work all or most of the time (81.4% versus 64.9%). Moreover, they are more likely to describe their knowledge as very complex (31.7% to 20.4%).

Table 4. **Ability to Plan Work and Knowledge complexity.**

	<b>Managers % (N)</b>	<b>Others % (N)</b>	<b>Total % (Total N)</b>
Can you plan your own work? (Percentage saying all or most of the time)	<b>84% (221)</b>	<b>62.9% (178)</b>	<b>73.1% (546)***</b>
Do you consider the body of knowledge you bring to your job complex? (Percentage saying 'very complex')	<b>31.7% (83)</b>	<b>20.4% (58)</b>	<b>25.8% (546)***</b>

Chi-square indicates significance if bolded: \*\*\* p<.001

Thus engineering managers and non-managers appear to have significantly different working conditions. Managers have more autonomy to plan their work and working hours, they have more decision-making authority, and consider their job knowledge to be complex. Non-engineers still have considerable autonomy, with almost half saying they can set their own working hours and 63% saying they can plan their own work. Nevertheless, they have less autonomy and decision-making authority than managers, and they are less likely to have the ability to bring their complex knowledge to their work.

## Professional Class

The sociological literature on professions has recently focused on hybridization, but perhaps the major source of division is not simply organizational position, but professional class. I compared professional classes on the same attitudinal and working conditions measures, to ascertain if engineers vary by class position.

**Table 5: Professional Class by Professional Attitudes**

	<b>Owner % (N)</b>	<b>Self- Employed % (N)</b>	<b>Manager % (N)</b>	<b>Employee % (N)</b>	<b>Overall %</b>
It's getting harder to find steady work in the Engineering field in Ontario.	20% (3)	52% (37)	44% (83)	53% (161)	51.8%
There is a shortage of qualified people to fill the engineering jobs available in Ontario.	26.7% (4)	32.4 (23)	34% (64)	25% (76)	28.4%
Globalization is opening up more opportunities for professional engineers	46.7% (7)	31% (22)	30.8% (58)	27.3 (83)	28.3%
Those seeking engineering expertise too often employ non-Canadian firms whose work does not meet Ontario standards	26.7% (4)	31% (22)	28.2% (53)	22% (302)	26.7%
Global competition puts pressure on Canadian companies to lower their standards.	46.7% (7)	36.6% (26)	35.1% (66)	36.1 (109)	37.1%
It is difficult to balance employer expectations with a commitment to professional ethics.	13.3% (2)	26.7% (19)	23.9% (45)	24.8% (75)	25.7%
Work-family balance is difficult to achieve in the Engineering field	40% (6)	52.1% (37)	52.1% (98)	48.8% (147)	50.6%
I consider my engineering degree to have been a good career investment.	100% (14)	91% (63)	93.6 (175)	85.5% (247)	87.7%

Some cell counts too low for Chi-Square, so significance tests were not conducted.

Looking at a fuller range of organizational and class positions reveals a more complex picture and greater diversity within professions. The small number of professional employers in the study makes generalizations about their experiences difficult, but they appear to be notably more concerned with globalization, fearing that global competition puts pressure on companies to lower standards, while also being more likely to see globalization as opening up opportunities. On many dimensions they differ from the other categories of engineers. Particularly interesting – because they receive little attention in recent professions literature – are the self-employed. Table 5 suggests that self-employed engineers are quite similar to managers on several attitude dimensions (work-family balance, engineering degree a good investment, impact of

globalization). However, they are closer to employees in their belief that it is getting harder to find a good job in Ontario, and they are more likely than others to report that it can be difficult to balance expectations with ethical values, and that non-Canadian firms sometimes cannot meet provincial standards. While the differences between managers and professional employees are evident in Table 5, as they were in Table 2, bringing professional owners and the self-employed into the picture reveals more intra-professional differences of opinion.

**Table 6. Autonomy and Decision-Making authority by Class (Percent saying “Yes”)**

	<b>Owners % (N)</b>	<b>Self- Employed % (N)</b>	<b>Managers % (N)</b>	<b>Employees % (N)</b>	<b>Overall % (Total N)</b>
<b>Can you decide your own working hours?</b>	100% (14)	87.9% (58)	65.3% (115)	51% (133)	60.5% (567)
<b>Do you feel you meaningfully participate in decision making?</b>	100% (14)	66.7% (44)	66.5% (117)	24.7% (64)	46.4% (565)

**Table 7. Ability to Plan Work and Knowledge Complexity by Class**

	<b>Owners % (N)</b>	<b>Self- Employed % (N)</b>	<b>Managers % (N)</b>	<b>Employees % (N)</b>	<b>Overall % (Total N)</b>
<b>Can you plan your own work? (Percentage saying all or most of the time)</b>	100% (14)	93.9% (62)	80.1% (141)	63.5 (165)	73.1% (566)
<b>Do you consider the body of knowledge you bring to your job complex? (Percentage saying ‘very complex’)</b>	57.1% (8)	30.3% (20)	27.9% (50)	22% (59)	25.7% (579)

Not surprisingly Tables 6 and 7 also show significantly different working conditions across engineers by class location. All owners report autonomy and decision-making authority, and most say the knowledge they bring to their work is ‘very complex’. The self-employed report a great deal of autonomy around planning, and working hours, but only two-thirds report decision-making authority. Many self-employed engineers may be working on contracts;

decision-making authority may sometimes lie with those purchasing their services. Professional employees report some autonomy, but are much less likely to see their knowledge as complex. Most notably, professional employees report substantially less decision-making authority than professionals in all other class positions. Only a minority of professional employees feel they have a voice in organizational decision-making. Their lack of power is particularly stark when contrasted to that reported by professional owners.

Overall, professional's working conditions are clearly demarcated by class position.

### *Visible Minority Status and Gender Differences*

The sociological literature highlighting stratification within professions, sometimes points to rising diversity and gender as sources of division. Table 8 compares those who self-identify as members of a visible minority to those who do not, as well as men and women, and the Canadian and foreign-trained on the same professional concerns variables.

**Table 8. Agreement with statements about challenges affecting the engineering profession**

	<b>Vis. Min. % (N)</b>	<b>Other % (N)</b>	<b>Male % (N)</b>	<b>Female % (N)</b>	<b>Foreign- Trained</b>	<b>Canadian- Trained</b>
It's getting harder to find steady work in the Engineering field in Ontario.	<b>63.1% (77)**</b>	<b>47% (199)</b>	51.1 (260)	52.2 (60)	<b>61.1% (66)*</b>	<b>30.8 (157)</b>
There is a shortage of qualified people to fill the engineering jobs available in Ontario.	<b>20.5 (23)**</b>	<b>29.1 (123)</b>	<b>29.7 (151)</b>	<b>21.7 (25)*</b>	25% (27)	29.1% (148)
Globalization is opening up more opportunities for professional engineers	<b>27.7% (31)*</b>	<b>31.9% (135)</b>	<b>30.2 (154)</b>	<b>21.7 (25)*</b>	29.6% (32)	28.9% (147)
Those seeking engineering expertise too often employ non-Canadian firms whose work does not meet Ontario standards	<b>32.1% (36)**</b>	<b>25.1% (106)</b>	<b>27.7 (141)</b>	<b>19.1 (22)***</b>	<b>23.1% (25)**</b>	<b>27.3% (139)</b>
Global competition puts pressure on Canadian companies to lower their standards.	46.4% (52)	35.4% (150)	<b>38.7 (197)</b>	<b>27.8 (32)***</b>	<b>32.4 (35)**</b>	<b>37.7 (192)</b>
It is difficult to balance employer expectations with a commitment to professional ethics.	<b>34.8% (39)**</b>	<b>22.2 (94)</b>	25.4 (129)	27.8 (32)	19.4 (21)	26.7 (136)
Work-family balance is difficult to achieve in the Engineering field	<b>56.2 (63)*</b>	<b>48.2 (204)</b>	<b>48.9 (248)</b>	<b>58.8 (67)*</b>	<b>33.3 (36)**</b>	<b>52.1 (265)</b>
I consider my engineering degree to have been a good career investment.	<b>80.4% (90)**</b>	<b>90.8% (384)</b>	87.8 (433)	86.1 (93)	<b>84.3 (91)*</b>	<b>87.6 (446)</b>

Chi-square significant if bolded: \*\*\* p<.001; \*\* p<.01, \* p<.05

There is a lot of information in Table 6, but a quick scan reveals that visible minority engineers differ from non-visible minority engineers on most attitudinal measures. Most notably, visible minority engineers are more likely to agree that it is getting harder to find work in engineering. Members of visible minorities may be impacted disproportionately by a poor labour market. Visible minority engineers are also less likely to believe there is a shortage of qualified engineers. They are more likely to agree it is difficult to balance employer expectations with a commitment to professional ethics. They are also more likely to agree that work-family balance is difficult to achieve in engineering. Visible minority engineers are somewhat less likely than others to see their engineering degree as a good investment. Differences between foreign-trained engineers and Canadian trained engineers are also evident. Again, the most notable difference is that the foreign-trained are much more likely than the Canadian-trained to agree that it is difficult to find steady work in engineering right now. Furthermore, the foreign-trained are more optimistic about globalization than their Canadian-trained counterparts: they are less likely to believe international firms cannot meet Ontario standards, and less likely to believe that global competition leads Canadian firms to lower their standards. The internationally educated are also much less likely to report that work-family balance is difficult to achieve, than Canadian-trained engineers.

Table 8 also reveals a few gender differences in attitudes. Female engineers are less likely than male engineers to agree there is currently a shortage of engineers. They are also less likely to agree that globalization is opening up new opportunities for engineers, and less likely to believe that globalization leads to hiring firms with lower status. Women are more likely to agree that work-family balance is difficult to achieve, than are male engineers.

**Table 9. Autonomy and Decision-Making authority (Percent saying “Yes”)**

	<b>Vis Min % (N)</b>	<b>Majority % (N)</b>	<b>Male % (N)</b>	<b>Female % N</b>	<b>Foreign- Trained % (N)</b>	<b>CDN- Trained</b>
Can you decide your own working hours?	<b>41.1 (46)</b>	<b>66.2% (280)***</b>	61.5 (284)	57.1 (91)	46.9 (45)	<b>63.4% (295) ***</b>
Do you feel you meaningfully participate in decision making?	<b>32.1% (36)</b>	<b>50.4% (213)***</b>	<b>50 (230)</b>	<b>30.8 (28)**</b>	37.9 (36)	<b>46.5 (224)***</b>

Chi-square is significant if bolded: \*\*\* p<.001; \*\* p<.01, \* p<.05

**Table 10. Ability to Plan Work and Knowledge Complexity**

	<b>Vis Min % (N)</b>	<b>Majority % (N)</b>	<b>Male % (N)</b>	<b>Female % N</b>	<b>Foreign- Trained % (N)</b>	<b>CDN- Trained</b>
Can you plan your own work? (Percentage saying all or most of the time)	<b>62.2 (69)</b>	<b>77.3 (327)***</b>	74.4 (343)	70.3% (64)	71.9% (69)	73% (341)
Do you consider the body of knowledge you bring to your job complex? (Percentage saying 'very complex')	<b>17% (19)</b>	<b>28.4 (120) **</b>	<b>28.1 (132)</b>	<b>12.6 (12) **</b>	16.5% (16)	<b>27.5 (131)***</b>

Chi-square is significant if bolded: \*\*\* p<.001; \*\* p<.01, \* p<.05

Tables 9 and 10 reveal differences in working conditions across gender, race and location of training. Visible minority engineers are less likely to report the ability to plan their own work, and working hours. They have less decision-making authority, and report that they bring less complex knowledge to their jobs. Similar gaps in autonomy and authority are evident when the foreign-trained are compared to the Canadian trained; however, the foreign-trained and Canadian-trained are equally likely to report that they can plan their own work. Only some of the gender differences are significant. Female engineers are less likely than male engineers to participate meaningfully in decision-making, and they consider the knowledge they exercise at work to be less complex.

Overall, there are clearly many differences amongst engineers in their working conditions and professional opinions. Engineers are divided by gender, race, and country of training, as well as by managerial identity and professional class.

## Discussion

A rising body of sociological literature argues that organizational and other social changes are leading to greater stratification within professions, and that internal divisions have the potential to undermine professional unity. Research has focused on organizational change that may sharpen the divide between managers and other professionals. Nevertheless, research has pointed to other sources of potential stratification including gender, race, and country of training. This study suggests that all of these factors are potential sources of difference and division within professions.

Engineers who identify as managers and those who do not, differ in their professional opinions and their working conditions. On most measures statistically significant differences were identified. Non-managers are more concerned with the impact of recent change such as globalization on job availability, and professional ethics. Nonetheless, differences on professional attitudes were not large in magnitude – they were simply differences of degree. More substantial differences are evident respecting working conditions. Non-managers have less autonomy and decision-making authority than managers. Broadening out the picture by looking at class demonstrates that engineers who are self-employed or owners differ as well from professional employees in their work experiences and attitudes. In particular, professional employees have less decision-making authority than do engineers in other class locations.

With respect to other factors, visible minority status seems a strong source of division. On both attitude and working conditions measures, visible minority engineers differed from others. Differences between men and women, and the Canadian- and foreign-trained were also identified on many variables, but fewer differences were statistically significant. This could be an artifact of the low number of respondents who were female, and who were foreign-trained.

Overall, it seems clear that gender, race, class, location of training, and organizational position are potential sources of division and stratification within the engineering profession.

Do these divisions have implications for professional unity? Differences in attitudes may not necessarily result in professional fissures. Where they become particularly significant is when attitudes shape organizational and/or professional policy. If employers are more likely to believe there is a shortage of engineers, they may continue to push the government to increase immigration in this area, leading to poorer job opportunities and career prospects for rank and file engineers. If (non-visible minority) men experience less work-family conflict they may be reluctant to support policies to reduce it. If only the vulnerable are concerned with ethical challenges, these may persist or worsen.

Differences in working conditions are likely more substantial. Traditionally professionals have had jobs characterized by autonomy and the ability to exercise judgement independently. By and large, the survey results suggest engineers continue to have a fair amount of autonomy and decision-making authority. Nevertheless, it is clear that managers, owners, and to some extent the self-employed, have more than do professional employees. These findings could reflect trends of proletarianization, identified by some scholars (Larson 1980; Coburn 1994). The autonomy of rank and file professionals could be steadily eroding, with only those professionals in management or ownership positions being able to maintain it. What is evident here is that professionals' working conditions do differ significantly by organizational position, class, race, gender, and location of training. Variations in working conditions and professional privileges signal intra-professional stratification.

The findings of this study provide some support for the literature on hybrid professionalism, and the contention that professional managers' standpoints blend professional

interests with managerial concerns (McGivern et al. 2015). At the same time, this study suggests that a more complete picture of professional divisions will be gained by taking professional class into account. Indeed, the relevance of class, casts doubt on the postulate that all professionals may come to adopt more corporate values (Noordegraaf 2015). Rather professional values appear to vary by class position. They also clearly vary by gender, race, and country of training. Future research should explore the interplay of these factors, taking a more intersectional approach to determine how gender, class, race, country of training and organizational status, combine to shape professionals' experiences, and potentially intra-professional stratification.

Future research would also benefit from a longitudinal approach to explore how differences in attitudes and work experiences shape professional development. The presence of stratification within professions is not new, and intra-professional differences in attitudes and work experiences will not necessarily undermine professional unity. Nonetheless, they could shape the course of professional development in the years to come.

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<sup>i</sup> Steps were taken to ensure professional autonomy. Legislation for some professions prevented their employment by non-professionals. There was some concern that private interests could force professionals to compromise their commitment to the public interest.

<sup>ii</sup> The fall-out of the Enron and other similar corporate scandals brought legislative change (Sarbanes-Oxley Act 2002) reducing American accountants' powers of self-regulation.

<sup>iii</sup> A linked body of research explores managers' co-optation of professional values for organizational gain. Most notably, while 'professionalism' used to denote autonomy, it increasingly consists of a set of practices and organizational rules aimed at increasing managerial control, and enhancing professionals self-discipline to corporate policies and goals (Evetts 2006, 2011; Muzio and Kirkpatrick 2011).

<sup>iv</sup> Research on engineering should explore differences across engineering specializations further. Research on the medical profession hints that differences across professional sub-specialties can be significant (Correia and Denis 2016; Waring and Currie 2009). Firm size is also an important area to explore. Many recent studies of professions in organizations focus on large firms, but the majority of professionals in engineering and other professions, work in small to medium firms. This paper is unable to investigate either of these dimensions.

<sup>v</sup> I ran the same analyses with an alternative measure: 'Do you have a managerial role?' On average there were fewer differences between people in a managerial role and other professional employees, than there were between people who identify as managers and professional employees. Managerial identity therefore appears to be an important source of difference like the hybrid professionalism literature indicates.

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