



Professors and Internationalization in Canada: Academic Disciplines and Global Activities

Kanada'da Profesörler ve Uluslararasılaşma: Akademik Disiplinler ve Küresel Faaliyetler

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Özet

Bu çalışma, Akademik Meslekte Bilgiye Dayalı Toplum (APIKS) anketinin bulgularını kullanarak profesörlerin Kanada üniversitelerindeki uluslararasılaşma faaliyetlerine ilişkin algılarını incelemektedir. Bulgular, akademik disiplinlerin aynı üniversitelerdeki farklı uluslararasılaşma biçimleri için düzenleyici mantık olduğunu göstermektedir. Pozitif bilimlerdeki profesörlerin uluslararası yayın yapma olasılığı daha yüksek iken, sanat dalları ve beşeri bilimlerdeki profesörlerin ders içeriklerini uluslararasılaştırma olasılığı daha yüksektir. Bağlamsal analiz bulguları, Kanada yükseköğreniminin ademi merkezizetçiliğinin yanı sıra bu disiplin ayrımlarını şiddetlendiren, ancak nadiren tanınan üniversite yönetimine işaret etmektedir. Bunlara dayalı olarak, disiplin ayrımlarını dikkate alan yeni uluslararasılaşma anlayışları önerilmektedir.

Ahahtar sözcükler: Akademik meslek, araştırma, eğitim-öğretim, Kanada yükseköğretimi, öğrenci hareketliliği, profesörlük, uluslararasılaşma.

Abstract

This paper examines professors' perceptions of internationalization activities at Canadian universities using the findings of the Academic Profession in the Knowledge-based Society (APIKS) survey. The findings suggest academic disciplines are the organizing logic for diverse manifestations of internationalization within the same universities. Professors in the hard sciences are more likely to publish internationally while those in the arts and humanities are more likely to internationalize their curriculum. The findings are analysed contextually, pointing to the decentralization of Canadian higher education as well as university governance which has exacerbated, yet rarely recognized, these disciplinary divides. The paper calls for new conceptual understandings of internationalization that take into account disciplinary divides.

Keywords: Academic profession, Canadian higher education, internationalization, professoriate, research, student mobility, teaching.

Scholarship and programming related to the internationalization of higher education has grown exponentially in the past 25 years. Universities have rushed to recruit foreign students, fund international partnerships, set up campuses abroad, and increase the global content of curriculum at home (Altbach, 1996; Knight, 2011; Tamtik, Trilokekar, & Jones, 2020). These key features of internationalization are often the unit of analysis when institutions and countries are studied. Several common debates are present in discussions of these practices, examining whether initiatives are for-profit, non-profit, governed transparently or subject to elite strategies of institutional prestige (Friesen, 2013; Karram Stephenson,

2013). Conceptually, the most frequent theories examine the notion of internationalization as a financial or cultural process. Do international students, research partnerships and curriculum reforms contribute to revenue for institutions and nations or new forms of inter-cultural understanding? At the faculty level in Canada, such analyses fail to identify the main fault line in conceptions and practices of internationalization. While institutions and nations are pursuing profits or broadening their cultural cache, professors' experiences with internationalization are shaped most strongly by one key factor: the academic discipline.

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Scholarship has confirmed that professors play a central role in internationalization programming as they conduct the research, teaching and partnerships that elevate their institutional and national prestige in the knowledge economy (Bond, 2003; Friesen, 2013; Odgers & Giroux, 2009). Yet professors themselves are a disparate group, sculpted by what Rostan and Antonio Ceravolo (2015) called, “disciplinary effects”. This paper draws on data from the *Academic Profession in the Knowledge-based Society* (APIKS) survey to argue that professors’ engagement in internationalization is predominantly shaped, or at least heavily influenced, by the boundaries and nature of their academic disciplines, leading to disparate modes of internationalization.

This paper has three aims. First, it seeks to locate Canadian internationalization of higher education within the broader global trends and policies commonly associated with the phenomenon. Second, it presents findings from the 2018 APIKS survey, supplemented by comparisons from the 2007 *Changing Academic Profession* (CAP) survey, to show the disciplinary divides that shape professors’ engagement in internationalization activities. Finally, this paper contributes to theoretical debates on the nature of internationalization by calling for new understandings of internationalization as conceptualized by professors in diverse disciplines.

Internationalization in Canada

Canadian Governance Context

Canada is a geographically large country (9.9 Million Sq km) which borders the United States. The country’s population is approximately 38 Million and 66% live in the south within 100 km of the American border (StatsCan, 2020). Political power is divided between the federal government, 10 provincial and three territories governments. Education is the exclusive jurisdiction of each provincial or territorial government including the funding and regulation of higher education. Each province is home to at least one large, public university and a technical-vocation system of colleges. There are also a small number of religious or private institutions. Public universities in Canada were established as autonomous, self-governing institutions, contributing to the distinct, decentralized nature of higher education in Canada. There is no real sense of a co-ordinated national “system” but rather 10 distinct provincial systems (Jones, 1997).

In terms of internationalization, provincial discourses most often define the phenomenon as the recruitment of inbound international students, predominantly for revenue, but also as a source of potential immigration. However, Tamtik et al.

(2020) suggest that, while provinces share the target of recruiting students, each province embarks on internationalization with very different motivations and policy discourses. Internationalization, where it impacts higher education, has led to “...a convergence, overlap, or collision of policy sectors” (Trilokekar, Jones, & Tamtik, 2020, p. 8). Multiple stakeholders in education, government and business have an interest in shaping internationalization policy at the provincial level and policy is often a “temporal compromise” responding to these interests.

The federal government, prior to 2014, had no Canada-wide international education strategy. Instead, the federal government’s Department of Foreign Affairs and International Trade engaged in a few programs of “cultural relations” through funding of the Canadian Studies Program Abroad and furthering Canada’s “brand” (Karram Stephenson, 2018; Trilokekar, Jones, & Shubert, 2009). Scholars critiqued this gap stating “the absence of a national policy in Canada has led to a piecemeal and largely uncoordinated approach, and Canada has only a small share of the global market for higher education,” (Trilokekar & Jones, 2013). When the first International Education Strategy (2014–2019) was finally launched, it set specific targets such as doubling the number of international students coming to Canada, accessing high-yield country markets for recruitment, creating 86,500 new jobs sustained by international education, and improving pathways for international students to remain in Canada as citizens (Global Affairs Canada, 2019).

Inbound Student Mobility: Recruiting International Students

The long-awaited internationalization strategy largely conceptualized internationalization as synonymous with student mobility and there was little exploration of faculty-related activities (Anderson, 2015). This is perhaps not surprising given Canada’s largest and most visible area of internationalization is the recruitment of full-fee paying international students (Chen, 2008; Sá & Sabzalieva, 2018; Scott, Safdar, Trilokekar, & El Masri, 2015). International students and their related activities contribute more than \$17 billion USD to the Canadian economy each year (Coulton, 2020). Between 2010 and 2019, Canada saw an increase of 185% in the number of inbound international students, with a total of 642,480 international students studying in Canada’s universities and colleges in December 2019 (CBIE, 2020). These numbers are expected to change in response to the Covid-19 pandemic of 2020–2021; and government forecasts anticipate Canadian universities will lose almost \$300 Million USD if internation-



al student enrolment decreases by even 13% (Government of Canada, 2020). However, ongoing government intervention and institutional efforts have supported a swift in-person return to campus. The scholarly research on inbound student mobility critiques the financial dependence of institutions on international student fees (Garson, 2016; Guo & Guo, 2017; Karram Stephenson, 2013); assesses the nature of transition programs (McCartney & Metcalfe, 2018); examines academic supports (da Silva, Zakzanis, Henderson, & Ravindran, 2017; Li, 2004), socialization (Ngobia, 2011; Zhou & Zhang, 2014), and language acquisition (Cheng & Fox, 2005).

Internationalization and Canada's Professoriate

Understanding the decentralization of Canadian federalism is essential to explaining the forces which shape international higher education in Canada. Federal and provincial policies have largely been driven from the bottom-up, with institutions and the professoriate taking the lead in most internationalization initiatives (Tamtik et al., 2020). Governments have responded by positioning student recruitment as a national industry, but also a pathway to immigration, and while there is some acknowledgement of broader objectives and benefits, governments have largely left decisions related to other forms of internationalization to the discretion of the sector. Putting aside policies that largely support institutional initiatives, internationalization continues to be largely defined and operationalized by the activities of individual professors, departments and institutions (Shubert, Jones, & Trilokekar, 2009; Tamtik et al., 2020; Tamtik & Sa, 2020).

Although the current scholarship on professors' international activities is quite small in Canada, the most frequently studied theme within this literature explores internationalization where it intersects with teaching. This scholarship defines internationalization as adding a global component to teaching curricula. Professors in Canada have been identified as the driving agents for internationalizing "at home," (Bond, 2003; Friesen, 2013; Odgers & Giroux, 2009), particularly in the area of curriculum reform. Faculty are positioned as the creators and disseminators of classroom material and thus their commitment or resistance to internationalization has far-reaching results. Friesen (2013) argues, "faculty members within higher education institutions are key agents in the institutional internationalization process," (p. 210).

Scholarship confirms international research collaborations increase professors' publication rates (Kwiek, 2019) and citations rates (Li, Liao & Yen, 2013), and are hailed as evidence of research excellence within departmental units and higher education systems (Ulnicane, 2014). The rapid

advances in information and communication technologies, associated with globalization, facilitate communication across borders, the sharing of resources (financial, documentary and software), use of laboratories and the control of remote scientific instruments. In Canada, Larivière, Gingras and Archambault (2006) show international joint publications increased in both the natural and the social sciences when international collaborations were undertaken although there were significant differences between fields and mediums of knowledge dissemination. The internationalization of research also takes the form of recruiting research-productive graduate students and faculty members from abroad (França & Padilla, 2017), which contributes to institutions' and countries' improved reputation.

Disciplinary Divides

The above literature on professors' internationalization activities in Canada examines the motivations, partnerships and policy context that fuels their work. Missing from this scholarship on internationalization activities is a discussion of the prominent division among academic disciplines which has been well documented in the broader academic literature. Early research by Biglan (Biglan, 1973b) analysed the clear epistemological and methodological divides between disciplines, linking these to different modes of research production. Biglan distinguished between the Hard and Soft disciplines on one axis and the Applied and Pure on another. This approach is frequently displayed in quadrants and has been used to categorize the differences between disciplines in graduate socialization (Tierney & Bensimon, 1996), approaches to teaching (Marsh, 1987) and divisions in institutional departments (Biglan, 1973a).

Building on Biglan's foundation, the work of Becher (1989) and subsequent theorists (Becher & Trowler, 2001; Colavizza, Franssen, & van Leeuwen, 2019; Gibbons et al., 1994; Kezar, 2014) describes how collectives of professors, affiliated by disciplines, have related to university power and eras of change in different ways. Becher argues disciplinary divides are the central organizing logic at universities and key to understanding university's complex governance dilemmas. He argues that members of the same institution may have little in common with each other while disciplinary affiliations closely connect them to scholars across the world. With the growth of the global knowledge economy, Gibbons et al. (1994) challenged Becher's original work, claiming traditional modes of discipline-bound knowledge production were on the decline and "mode 2" was on the rise defined by trans-disciplinary and translocational research endeavors often conduct-



ed outside the university with a high emphasis on applicability. This focus on *emergence* which claims knowledge production has fundamentally altered within (and without) traditional institutions is mirrored by epistemological shifts in the social sciences. Frameworks like Social Network Analysis call into question, “departments, schools/colleges, or state systems as the natural unit or target for change processes,” (Kezar, 2014) arguing instead that decision-making and the impetus for change are sparked by cross-sectoral, personal networks that transcend the formal institution. These theoretical perspectives offer three gradations of influence: Becher points to institutionalized disciplinary divides *within* the university; Gibbons et al. (1994) argue for partnerships between formal agents (institutions and industry) outside the university; and social network theory brings to light informal, personal networks between a range of actors within and outside formal institutions.

These perspectives inform the following presentation of the Canadian APIKS data with their clear divisions in the internationalization activities undertaken by professors in different disciplines. There is already evidence from the Canadian context that disciplinary boundaries shape the work experiences of professors, particularly in their research production. In 2006, research revealed over 90% of the articles in the natural sciences were jointly published compared to 66% in the social sciences and 10% in the humanities (Lariviere et al., 2006). These findings point to an important divide among disciplines that is likely impacting internationalization activities as well. This paper seeks to understand whether these distinctions, as they relate to internationalization, are confirmatory of Becher’s original thesis on the strength of disciplines or imply a new, global network of knowledge producers across sectors and institutions.

Method

In light of the key role played by Canadian professors in the internationalization of higher education, research is needed to understand their experiences and perceptions of this dynamic process as well as how these experiences are shaped by their disciplinary affiliations. This paper presents the findings of the 2018 APIKS where they relate to internationalization.

The APIKS survey instrument was developed by the global project’s international executive team which tested its reliability. Canada was not part of the survey development but was one of 31 countries who distributed the survey. The Canadian sample included professors from 64 publicly-funded universities in all 10 Canadian provinces. After obtaining ethical per-

mission from the 64 sample universities, two main methods of recruitment were used. First, at 49 universities, email invitations to the survey were distributed by the offices of the Vice-President Academic/Research. At a further 15 institutions, where email addresses were publicly available, professors received a direct invitation from the research team. A total of three invitation emails were sent to potential participants.

The APIKS survey was distributed over a nine-month period from October 2017 to July 2018. Following data collection, the research team worked for six months to clean the data for analysis. This involved a four-step process of validation. First, only data from full-time professors was included in the final sample. Since academic librarians are often part of faculty lists in Canada, many librarians received the invitation. These responses were removed from the sample due to the distinct nature of their employment. Next, the French and English responses were harmonized and coded into numeric responses. Third, two questions were removed from the survey in which the formatting was corrupt. Finally, significant outliers and straightliners were removed to ensure all data was valid. When data cleaning was complete, 2968 valid responses were collected in English and French for a response rate of 9.35% ■ Table 1.

The APIKS study is the 10-year follow up to the CAP study conducted in 2007. The Canadian component of the CAP study used a two-tier cluster sample from 18 publicly-funded institutions in each of the 10 provinces. The bi-lingual (French-English) survey resulted in 1112 valid responses, and spawned numerous publications on the academic profession in Canada as well as comparisons around the world. (Gopaul et al., 2016; Jones et al., 2012; Jones et al., 2014; Metcalfe, 2008; Padilla-Gonzalez Metcalfe, Galaz-Fontes, Fisher, & Snee, 2011). In the following sections, the findings from the APIKS study will be presented, augmented where appropriate by the CAP findings.

Ethical permission for the 2018 study was obtained from the University of Toronto, as the primary institutional oversight, as well as 63 participating institutions where data was collected. Each institution gave permission for the survey to be distributed to their faculty.

■ Table 1. Valid response rate for Canadian APIKS 2018 survey.

	Total	Valid
Email address	45,437	31,728
Completed surveys	3798	2968
Response rate		9.35%



Results

General Trends

Doctoral training is a key area where many professors form the international connections which are shown to benefit their future careers, particularly in research productivity. The findings from the APIKS study confirms 75.3% of professors working in Canada received their bachelor's degree in Canada but only 66% received their doctoral degree in Canada. Within this group, professors who received their doctoral training in the USA (28.6%) form the largest proportion followed by the United Kingdom (9.3%) and France (5.2%). Notably, the remaining 57% of faculty who received their doctorate abroad represent more than 35 countries. These data are interesting in light of related scholarship on full-time faculty which indicates 40% of professors were born outside Canada (CAUT, 2014). ■ Table 2 provides the full range of internationalization-related items from the APIKS survey.

Teaching

In the CAP and APIKS surveys professors were asked to what extent they “emphasize international content or perspectives” in their teaching. In the 2018 APIKS data, 58.4% of professors were internationalizing their curriculum. This number, however, is not the same across disciplines. Only one third of

professors in the hard sciences (Chemistry 32.4%, Physics 37.2%) selected agree or strongly agree, compared with 76.1% in the Humanities and Arts. There was little difference between 2007 (61%) and 2018 (58.4%) in the number of professors who teach with international perspectives or content overall, and similar divisions between disciplines.

Research

Professors who conducted research in the three years prior to 2018 were asked whether their research was international in scope or orientation. When the responses were compared across disciplines, professors in the Arts and Humanities were found to perceive their research to be international in scope/orientation (64.1%) while 20% fewer do so in Chemistry (44.6%), Education (45.1%), and Medical Sciences (46.5%).

When asked if they collaborate with international colleagues in their research, the number of respondents increased by 7% from 63% in 2007 to 70% in 2018. There is an important distinction in the level of international collaboration between professors in different academic disciplines. ■ Table 2 shows that only 63.9% of professors in the Humanities and Arts collaborate with international colleagues compared with 85% in Agriculture, Physical Sciences and Mathematics.

■ Table 2. APIKS general.

Trends	% of who perceive increase in international students*	% of professors who incorporate international teaching content*	% of professors whose research is international in scope or content*	% of professors who had research collaborations with int'l colleagues†	% of professors who co-authored with int'l colleagues†	% research funding from international sources	% professors whose external activities contribute to society at global level*
Discipline							
Agriculture/forestry	79%	58%	49%	88%	63%	0.3%	28%
Business admin/economics	67%	60%	54%	68%	46%	0.9%	30%
Chemistry	71%	32%	45%	66%	69%	2.0%	32%
Computer science	64%	43%	61%	80%	64%	1.6%	38%
Engineering/manufacturing	61%	45%	53%	73%	58%	3.4%	35%
Humanities/arts	62%	76%	64%	64%	31%	2.7%	37%
Law	49%	55%	48%	77%	39%	1.6%	45%
Life sciences	52%	56%	59%	81%	68%	2.4%	30%
Medical health science	48%	49%	47%	68%	62%	2.7%	34%
Physics/math	60%	37%	53%	86%	76%	2.9%	26%
Social and behavioral sciences	50%	62%	54%	68%	44%	2.7%	39%
Social work	43%	62%	53%	72%	48%	1.0%	40%
Teacher training and education sciences	51%	59%	45%	66%	47%	1.8%	32%
Mean	58%	53%	53%	74%	55%	2.0%	34%

N=2680. *Professors who answered “strongly agree” and “agree”. †Professors who answered “yes”.



Furthermore, professors' 2018 responses indicate 50.4% of Canada's professors had co-authored a publication with international colleague in the past year and 16.9% of their overall publications were co-authored with international colleagues. Again, the difference between academic disciplines is significant with Humanities and Art professors indicating 7% of their overall publications were co-authored with international colleagues while those in physical sciences and mathematics were 38%.

Professors in Canada receive research funding from a number of sources including institutional, provincial, and federal granting councils as well as industry partners. When asked how much of this funding is provided by international funding organizations, professors suggested a larger percentage in 2007 (6.6%) than 2018 (2.39%). In the Canadian context, federal and provincial funding for research increased over the past decade which may have rendered international funding sources less important. When the 2018 data is cross-tabulated by disciplines, the earlier trends are not seen. Instead, Arts and Humanities are much closer to the hard sciences in receiving international funding than in questions of research collaboration or curriculum and internationalization.

External Activities

In the 2018 survey, the fifth section was designed to understand professors' activities outside the university, or their "external" activities, as well as the partners and funding that support these initiatives. When respondents were asked to

what extent their external activities influence society at the international level, the average number of respondents who selected agree or strongly agree was 37.1%. However, when this item is cross-tabulated by academic discipline, those in Law, Social Work and Services, Social and Behavioral Sciences are the top three disciplines. ■ Table 3 presents a summary of these findings.

Summary

The findings of the 2018 APIKS study confirm there are significant differences among professors in Canada based on disciplinary affiliations with regard to how internationalization is perceived and engaged. In developing their curriculum, more professors in the Humanities and Arts, Social Work and Services, and Social and Behavioural Sciences perceive their curriculum has a global orientation. Likewise, in research orientation, more professors in Humanities and Arts disciplines, compared with any other field, indicate their research is global in scope or orientation. However, in these same subjects there are fewer professors who collaborate with colleagues in other countries, and only 30% of those in Humanities and Arts co-authored publications with colleagues in other nations. In contrast, professors in the hard sciences (Mathematics, Physics, Chemistry) identify their courses and research subject as having less global content but are more likely to collaborate with international colleagues and co-author publications.

Professors in both hard sciences and humanities/arts/social sciences receive international funding at about the

■ **Table 3.** Internationalization funding and incentives.

Discipline	Funding for faculty members research abroad	Funding faculty members international conferences	Encourages faculty members to publish internationally
Teacher training and education science	26.1%	37.20%	49.8%
Humanities and arts	21.5%	39.90%	41.3%
Social and behavioural sciences	18.3%	36.10%	34.3%
Business and administration, economics	19.4%	52.60%	43.3%
Law	33.9%	37.70%	58.4%
Life sciences	19.9%	25.60%	34.8%
Physical sciences, mathematics	21.4%	26.00%	39.2%
Chemistry	20.3%	28.40%	33.8%
Computer science	18.7%	15.60%	42.2%
Engineering, manufacturing and construction, architecture	21.3%	16.20%	36.4%
Agriculture, forestry	35.9%	20.50%	67.5%
Medical sciences, health related sciences, social services	21.5%	27.60%	44.5%
Social work and services	12.9%	35.40%	29.0%



same rate (2.8%). Likewise, professors' perceptions on institutional incentives designed to support international research collaborations such as funding faculty research abroad or conference travel show an inverse trend. Ten percent more professors in the Humanities and Arts and Social/Behavioural Sciences, compared with their counterparts in the hard sciences, perceive there to be funding for conference travel as a result of internationalization. Funding for international collaborations are the same across these disciplines although they are very low with only 18–20% of professors seeing this as an outcome of internationalization. Despite the lack of co-authorship in the realm of research 39% of those in the Humanities and Arts and 39% of those in Social and Behavioural Science consider their external activities to have an international or global contribution. This compares with only 26% of those in Physical Science and Mathematics. Finally, more than half of the professors confirm they add global components and perspectives in their teaching, yet only 43% feel enhanced pedagogy is a visible outcome of internationalization. Likewise, 70% of professors collaborate with international colleagues and 45.3% perceive enhanced research networks an outcome of internationalization at their institutions.

Discussion

When grouped together as one collective in the APIKS findings, Canadian professors are shown to be very active in activities related to the internationalization of research. The large majority of professors collaborate and publish with peers in other countries and pursue research that is global in scope or orientation. At the same time, their engagement in the internationalization of teaching is less pronounced. Professors have been identified in the literature as the locus of change and necessary instigators in internationalizing curriculum, yet only 58% indicate they teach with a global orientation. These trends, while important to understanding the position of Canadian professors as a whole, conceal stark contrasts between the internationalization activities of professors in different academic disciplines. At their simplest, the divisions outlined above can be understood as a divide between the pragmatism of the hard sciences and the global imperative of the humanities and arts. The former collaborates internationally because their colleagues happen to live elsewhere while the latter approach the world as their sample. With this lens, the trends above are clarified. Those in the Hard Sciences produce and publish research collaboratively while their colleagues in Humanities and Arts commit to teaching or researching subjects with an international orientation.

Furthermore, this difference between disciplines in internationalizing their curriculum reflects an important difference in the conceptualization of knowledge in each discipline. Those in the hard sciences are likely to view knowledge as universal and thus, acontextual. With this foundation, they are less likely to perceive a need in their curriculum for adding “international” elements since the context of the curriculum is the same across contexts.

The decentralization of Canadian higher education, which has allowed professors to be such important leaders in universities' internationalization activities, also exacerbates the disciplinary divide when it comes to internationalization. Governments have largely adopted a narrow focus, and there is little of funding support or coordination that might, in other systems, steer or leverage international activities. Both governments and institutions may, for example, support the development of international research partnerships, but initiatives continue to be largely dependent on the entrepreneurial activities of individual faculty or research teams (Tamtik & Sa, 2020). Institutions may support initiatives related to the internationalization of curriculum, but the disciplines (operationalized with department structures) continue to play a major role in curriculum reforms.

Merton's (1973) work on the ethic of science adds some clarity on the foundational presence of collaboration in scientific research. In the sciences, the principle of “communalism” is the recognition of the collective and collaborative nature of science. It is also one of the four central norms that constitute the ethics of science (Merton, 1973). With the specialization of fields of study, the pools of potential collaborators within the same country tend to shrink. This is particularly true in Canada with its relatively small population and very low population density.

Becher and Internationalization

As Canadian universities continue to internationalize, disciplinary divides are definitive of how different professors engage with new global programs and research. Becher's contention that disciplines are the main organizing logic at universities still holds true in Canada. While the APIKS data does not specifically explore the extent to which “mode 2,” with its industry partnerships, is present in Canadian research production, the divide between the disciplines can be characterized as a pragmatism of research production and knowledge conceptualization rather than of scope. This is particularly true in Canada with its close proximity to the USA and the strong American science research infrastructure. While the survey did not inquire as to where professors' collabora-



tors reside, future research should examine the strength and prevalence of Canadian-American research collaborations. Likewise, America claims the largest number of professors who completed their doctoral work outside Canada. Doctoral formation, and the professional networks it provides, likely contributes to the frequency of Canada-US research collaboration. This relationship raises questions about what types of collaboration can be considered “international,” particularly in instances where two countries have very close educational ties. Similar to the European Union, a country’s “international” collaboration may appear high when in fact most collaborations may occur with colleagues in countries where professors already have a strong relationship.

Furthermore, research and innovation policies and strategies –both institutional and governmental– encourage and fund activities for the internationalization of research. This creates a special environment where institutions and governments that compete with each other for the prestige of scientific discoveries must at the same time collaborate with each other to achieve these same discoveries. This is what Breton (2011) called “coopetition” (a neologism formed from the words ‘cooperation’ and ‘competition’). These contextual factors describe science production broadly, and the Canadian context more specifically, and are helpful in understanding the findings in the hard sciences.

The picture in the Humanities and Arts, is quite different. The point of interest in what Biglan (1973) would call soft-pure disciplines is the data’s discrepancy between collaboration and publication. While 63% of professors in the Humanities and Arts collaborate with international colleagues only 30% co-author with those in other countries. This confirms Becher’s observation that a difference exists in publication expectations between hard and soft sciences. A greater value is placed sole-author publications in the arts and humanities, while co-publications are expected in the hard sciences. Since the APIKS findings confirm there is still the presence of “collaboration” among arts and humanities professors, this may indicate the importance of the personal, social networks that guide and shape professional work for academics, even in the absence of publications or outputs.

Implications

If the disciplinary divides of academia are central to understanding professors’ engagement with, and perceptions of, internationalization in Canada, what does this mean for conceptualizing and guiding internationalization practice at Canadian universities? First, this study has added nuance to Bond’s contention that “departments and disciplines have

been identified as the locus of curriculum development with professors as the central figures in undertaking curriculum design and communicating knowledge,” (2003, p. 9). It is certainly the case that professors are central and instigate most cross-border collaborations in research and publication. However, across disciplines those same professors may have very different beliefs and rationales guiding their international activities. Thus, initiating a global curriculum event in the hard sciences may take significantly more development work than the same event in the humanities and arts. Likewise, increasing targets for internationalization research collaborations in the humanities and arts will require more supports than in the hard sciences. Administrators who wish to advance cohesive strategies of internationalization for their universities need to be aware of these nuances. Their faculty are defining and ascribing distinct value to different components of internationalization. Taken together however, institutions should draw on the strengths of each disciplinary approach which, when seen as parts of a whole, can build globally-engaged institutions in both teaching and research.

Conclusion

This paper has presented the findings of the APIKS survey related to internationalization. The ongoing divide between disciplinary affiliations is shown to impact international activities and engagement in significant ways as professors from hard sciences engage more in research collaborations and publishing while their colleagues in the arts and humanities undertake globally-focused research programs and incorporate global perspectives in their teaching. These findings confirm that internationalization of higher education in Canada is a heterogeneous experience across institutions and between individuals. Further research at the institution-level would be beneficial to determine how institutions account for disciplinary divides as they develop internationalization strategies to guide very decentralized institutions. Finally, Canada’s unique relationship with the USA needs to be examined in studies on professors’ international work since it is unclear whether professors account for all their American collaborations which are axiomatic in discussions of internationalizations.

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