

Structural and Compositional Change In Canadian Geography Graduate Programs, 1992-2002

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This paper reviews the structure and composition of geography graduate programs in Canada. Specifically, the paper examines department composition by total faculty, faculty rank, terminal degree, macro-specialization (human, physical, human-environment, and geo-techniques), and micro-specialization. To that end, the paper is a descriptive accounting of faculty and department change and is intended to serve as a benchmark for future study.

Keywords: Canadian graduate programs

In 2002-2003, a minor debate emerged as to whether the Association of American Geographers should consider a name change. Specifically, leaders of the organization openly pondered preserving the acronym “AAG” by deleting the term “American” and inserting the term “Advancement”; re-defining the term “American” as inclusive of Canada, the United States, and Mexico; or even reconsidering the name in its entirety (Abler 2002a, 2002b). These efforts (while apparently not successful) illustrate how globalization has transformed North America and implies a new more homogenous community of North American geographers shaped by shared internal and external drivers exists. The purposes of this study are to chart the exact structure and composition of graduate geography programs in Canada and empirically compare the structure and composition of Canadian and United States departments.

While no doubt geographers in Canada and the United States recognize that their disciplines and shared communities are unique, most of the evidence that might support this assertion is anecdotal—not empirical. For example, Audrey Kobayashi's (2001) guest editorial entitled “All our own” identifies a certain “Canadianess” to the practice of geography in Canada. In our paper, we assess the administrative status of geography graduate programs in Canada. Specifically, we detail the structure and composition of graduate programs as an important indicator of a discipline's trajectory. Moreover, the evidence and results of this study will be compared to an earlier study of U.S. graduate programs published in the *Professional Geographer* (Bierly and Gatrell 2004).

Data & Analysis

Data for the analysis were manually extracted from the 1992-1993 *Guide to Programs in Geography in the United States and Canada* (AAG 1993) and 2002-2003 *Guide to Programs in Geography in North America* (AAG 2003).^{1,2} Graduate programs were selected for analysis as they form the center of professional development for academic geographers and are thus a direct indicator of its philosophical development and professional status. To chart the structure and composition of departments, the following variables were tabulated for 1992-1993 (1992) and 2002-2003 (2002):

Department Name:

The department name was chosen to observe potential differences between “geography-only” units and combined departments.

Terminal degree or degrees:

The level and type of terminal degree offered by a department. Departments with a geography or applied geography graduate degree or closely aligned graduate program have been included. Departments with graduate programs only in teacher education programs have been excluded.

Size of faculty:

Total full-time tenure-track faculty.

Faculty rank:

The number of faculty listed as Assistant Professor, Associate Professor and Professor level.

Macro-specialization:

All tenure-track faculty in geography graduate departments were classified as human, human-environment, physical or geotechniques geographers based on their listing and prioritization of specializations. These categories were treated as mutually exclusive³.

Table 1

University	1992	2002
Concordia	M	M
RyersonPolytechnic	B	new M
Windsor	M	eliminated
Trent	M	new PhD
Alberta	PhD	PhD
British Columbia	PhD	PhD
Calgary	PhD	PhD
Carleton*	PhD	PhD
Guelph	PhD	PhD
Laval	PhD	PhD
Manitoba	PhD	PhD
McGill	PhD	PhD
McMaster	PhD	PhD
Memorial	PhD	nd
Montreal	PhD	PhD
Ottawa	PhD	PhD
Queen's	PhD	PhD
Regina	PhD	PhD
Saskatchewan	PhD	PhD
Sherbrooke	PhD	nd
Simon Fraser	PhD	Phd
Toronto	PhD	PhD
Victoria	PhD	PhD
Western Ontario	PhD	PhD
Wilfred Laurier**	PhD	PhD
York	PhD	PhD
Waterloo	PhD	PhD
Lethbridge	nd	M
N. British Columbia	nd	PhD

*2002 data incomplete

**Combined program with Waterloo in 2002

Table 2: Canadian Faculty Composition, Rank, and Macrospecialization

1992	Lines	Assistant	Associate	Professor	Human	Human-Environment	Physical	Geo-Techniques	n
ALL	19.62	3.69	6.88	9.08	9.62	2.46	6.04	1.50	26
PhD	20.65	3.74	7.22	9.74	10.09	2.70	6.26	1.61	23
MA	11.67	3.33	4.33	4.00	6.00	0.67	4.33	0.67	3
2002	Lines	Assistant	Associate	Professor	Human	Human-Environment	Physical	Geo-Techniques	n
ALL	20.50	5.16	6.00	9.44	8.23	2.73	7.54	1.96	26
PhD	21.17	5.17	6.09	9.91	8.22	2.87	8.17	1.87	23
MA	15.33	5.00	5.00	4.00	8.33	1.67	2.67	2.67	3

Limitations

We identify two key limitations of this study. First, the assessment process is limited by a series of conceptual issues—most notably the intent and bias of the “process.” In practical terms, what do the measures really say? Is the analysis meaningful? Second, the data source itself has some inherent limitations, as departmental listings may alternatively be colored by individual faculty entries or blanket departmental entries from strong chairpersons. However, we believe the data source to be the most comprehensive, transparent, and realistic resource available.

Like earlier assessments (Groop and Schaetzel 1997; Kent 1982; Morrill 1981; Koelsch 1980) of geography PhD programs, the exact meaning of this study is highly dependent upon an individual or institutional point of view. That is, assessments are heavily dependent on the choice of measures used. As such, the chosen metrics reflect the values, judgments, and bias of the assessors. Despite this acknowledged shortcoming, the process used to perform this study is intended to generate a basis for measuring future progress and change across the discipline. Using a mixture of quantitative and qualitative factors, the study provides an accounting of actual faculty and departmental specializations.

Data and the AAG Guide: The AAG Guide’s reporting of faculty specialties is inherently uneven within and between departments and volumes. In some cases, faculty listings may represent the vision of a department chair, an idealized self-assessment of faculty, or an imprecise and/or shifting administrative structure. Such varying motives or realities reflect conceptual, practical, or administrative shifts in the discipline

and are thus inherently valid. We have preferred to err on the conservative side by minimizing interpretation of departmental submissions.

Because our study endeavors to identify core areas of research specialization, the specialization data is distinct from previously published data on specialty group membership. In contrast to specialty group data, the AAG Guide accounts for most academic geographers irrespective of their membership in the AAG and/or a paid membership in a specialty group. Moreover, specialty group membership is an inherently imprecise gauge of the discipline’s trajectory because the specialty group divisions do not necessarily correspond to dominant research programs in the discipline. Many specialty groups are not research areas per se or are relatively narrow. Specialty group membership includes a variety of constituencies beyond graduate faculty including students, K-12 teachers, and other professional geographers within and beyond the academy. Furthermore, membership in a specialty group is voluntary and often associated with an additional fee. Because of the AAG Guide’s unique purpose and status as the directory of the discipline within the U.S. and Canada, the dataset is the most comprehensive source available. More importantly, Canadian membership in the U.S.-based AAG may not necessarily be representative of the entire community.

Finally, the study does not use the department specialization classes identified and included in the AAG Guide’s ‘grid-style’

system. The exact method used to create the AAG specialization grid is unclear as: (1) programs are omitted, (2) errors are readily observed in the grid, (3) the grid appears to reflect historical areas of expertise, and (4) the classifications do not necessarily reflect recent developments or trends within the discipline or staffing changes in programs. Additionally, the AAG Guide's grid system is based solely on the historical development of geography in America—not necessarily the Canadian experience.

Trends & Tables

In general, the data indicate that Canadian programs are empirically distinct from those south of the border. At the most basic level, graduate programs in Canada have more faculty than those in the United States based on a review of Guide entries for 26 and 27 programs in 1992 and 2002, respectively (see Table 1).⁴ Likewise, a review of all programs (undergraduate and graduate) in Canada suggests that a much higher percentage of departments have graduate programs than U.S. counterparts. In the following discussion, the specific composition of these departments is examined in greater detail.

Faculty Size & Rank

The Canadian data indicate that the mean faculty size for all programs is 20.57 (see Table 2). When compared to the

Table 3: Specialization Rates

Canadian Geographers	1991	2001
Total Faculty	510	533
Mean Specialties per Faculty	1.57	1.59
U.S. Geographer	1991	2001
Total Faculty	1392	1573
Mean Specialties per Faculty	1.72	1.78

*When the most recent data exclude geologists, anthropologists, engineers, and others classified solely by discipline who are situated in **simple** combined Departments of Geography and _____ that correspond to strict discipline divisions (i.e., Geology or Anthropology), the trend is somewhat more pronounced, 1.82 and 1.60 for the U.S. (56 faculty excluded in 9 departments) and Canada (12 faculty excluded from McMaster), respectively.

companion study, Canadian programs are larger than their mean (12.1 faculty) U.S. counterparts. While no doubt the rather large number of terminal MA programs in the U.S. may account for a portion of the observed difference, the same trend can be observed in the PhD programs of Canada (21.35 in 2002) and the U.S. (15.1 in 2001). The distribution of faculty by rank tends to be top-heavy, as the rank of professor appears to be somewhat more prevalent in Canadian departments than in the United State—perhaps due in part to the unique cultures of promotion and tenure that have developed in the U.S. and Canada. That is, the specific administrative and academic structures observed in the U.S. and Canada are distinct and have no doubt contributed to somewhat different operational, financial, and administrative processes. Whereas a clear demographic shift is observed between 1991 and 2001 in U.S. departments as the mean percent of Assistants increased from 23% to 30%, the general trend is not observed in the Canadian system. The U.S. trend is even more pronounced in MA programs as the mean number of Full Professors fell from 44% to 37% and Assistant Professors expanded from 26% to 34% between 1991 and 2001. Whereas the aging professoriate in the U.S. appears to have resulted in an expansion at lower rank, this transition does not appear to have altered Canadian departments as the average department is composed of 46% Full Professors and the number has been unchanged since 1992. Canadian Departments are more balanced and tend to be centered more distinctly around the human and physical poles. This trend has become more solid as the most recent data demonstrate a nearly balanced distribution of departmental faculty lines between human and physical geographies—especially in Ph.D. programs (see Table 1). The only exceptions to this trend are MA programs that tend to focus more closely on applied social science and geotechniques than the wider discipline at-large.

Program Context & Change, 1992-2002

In Canada, the social science foundations of the discipline are widely accepted as the majority of programs are housed squarely within the confines of social science faculty (based on a review of university and department web-pages)⁵ Despite a social science bias within the context of an administrative geography,

Table 4: Matched Pair Distribution of Terminal Degree Programs by CAG Division

	Western	Ontario	Quebec	Atlantic	Prairie
MA	0	1	1	0	1
PhD 1992 n=25*	5	10	3	0	3
MA	0	1	1	0	0
PhD 2002 n=24*	5	10	3	0	3

departments that exist within social science structures, such as University of Western Ontario, have a record of maintaining and expanding the natural science components of the discipline. In most cases, Canadian programs endeavor to strike a delicate balance between physical and human constituencies. Similarly, Canadian geography programs housed in contexts that are not explicitly social science per se like Waterloo's Department of Geography, in the "Faculty of Environmental Studies", maintain a core of human and human-environment geographers—as well as a full complement of physical and technical faculty.⁶ This balanced approach is decidedly different than the strategies developed by prominent graduate programs in the U.S. For example, the University of Washington has (and until recently the University of Kentucky had) no physical geographers on faculty and makes no attempt to achieve any sense of balance.

Macro Versus Micro-Specialization

The proliferation of micro-specializations observed in the United States study does not appear to have occurred to the same extent in Canada (see Table 3). Indeed, the trajectory of Canadian geography is vastly different in this respect relative to trends in the United States. Whereas U.S. geography has been characterized

by an increasing heterogeneity, an increased interest on public policy, and concomitant decrease in scale as noted by Gaile and Wilmott (1989, p. xxxi), Canadian geographers are considerably more homogenous overall and the distribution of macro-specializations are more balanced and tend to be centered more distinctly around the human and physical poles. This trend has become more solid as the most recent data demonstrate a nearly balanced distribution of departmental faculty lines between human and physical geographies—especially in Ph.D. programs (see Table 2). The only exceptions to this trend are MA programs that tend to focus more closely on applied social science and geotechniques than the wider discipline at-large.

When and where program collapses across the Canadian system have been observed, the administrative trend has been to appeal to the physical sciences, as the social science traditions have not necessarily been nurtured. For example, the programs at Alberta and Windsor have been subsumed into new programs that are not combined Geography and Geology departments like those commonly observed in the U.S.—but revised programs under the rubric of earth science or geoscience. In the U.S., fully 34% of all 2001 graduate programs resided in combined departments or departments without geography in the title. However, combined administrative structures do exist like WLU's Department of Geography and Environmental Studies. Since 2002, one has emerged—the Department of Environment and Geography at Manitoba. Despite the Manitoba case, 83% of all 30 2002 Canadian departments listed in the AAG Guide (both graduate and undergraduate) reside in geography-only structures. Roughly 93% continue to reside in geography-centered structures, as implied by rank-order of disciplines, such as McMaster's School of Geography & Geology in 2003 (based on a survey of department homepages).

Interestingly, the emergence of geography and associated environmental administrative structures has not coincided with

Table 5: Human Specialties

	Cultural	Regional	Demography	Historical	Economic & Development	Transportation	Population	Urban	Planning & Landuse	Political & Social	Agriculture	Rural	Medical Geography	Gender, Feminism, & GLBS	Social Theory	Regional Science
1992	32	50	1	39	75	15	19	74	18	33	12	13	8	4	2	2
	3.99%	6.23%	0.12%	4.86%	9.34%	1.87%	2.37%	9.22%	2.24%	4.11%	1.49%	1.62%	1.00%	0.50%	0.25%	0.25%
2002	27	47	1	30	58	18	17	72	15	42	7	8	18	17	6	0
	3.18%	5.53%	0.12%	3.53%	6.82%	2.12%	2.00%	8.47%	1.76%	4.94%	0.82%	0.94%	2.12%	2.00%	0.71%	0.00%
Change	-5	-3	0	-9	-17	3	-2	-2	-3	9	-5	-5	10	13	4	-2

an altered graduate degree program as most retain a geography-only program of graduate study.⁷

Finally, three other program changes are of note. First, the creation of a combined program at Waterloo and Wilfrid-Laurier combines the strengths of two historically important programs to create a single collaborative program. In terms of observed change, it is evident that structural changes in the department at Wilfrid Laurier initiated the altered structure as the graduate program adopted an increasingly environmental focus that culminated in a new department identity under the rubric “geography and environmental studies”. The observed shift at Wilfrid Laurier is from a balanced department with a slight emphasis on human geography to a department specializing more heavily in physical geography and earth systems science. In addition to the Waterloo-Wilfrid Laurier case, Trent and Ryerson debuted new PhD and MA programs in geography, respectively.⁸ A matched pair comparison demonstrates the overall discipline was stable and expanding between the study years (Table 4).

In contrast to the Canadian experience in the 1990s, numerous programs merged, devolved, and/or disappeared in the United States (Bierly and Gatrell 2004). When and where new programs emerged in the U.S. many were not traditional geography programs *per se* (i.e., Applied Geography, Resource Management, Geoscience, GISci, International Studies, Policy Studies, etc...). Often though, program change coincided with name changes and seismic shifts in faculty lines and observed macro-specialization. Unfortunately, U.S. programs have been apparently unable to creatively restructure programs like the innovative Waterloo-Wilfrid Laurier case in order to maintain competitive and national programs.⁹

Micro-Specializations

Human Geography (Table 5): In 1992, the principal areas of microspecialization in human geography within Canadian graduate programs mirrored those of the United States. Declared expertise among human geographers in 1991 was focused in the same top three specialties, economic-industrial-development (9.34%), urban (9.22%) and regional-areal (6.23%), but with a notably smaller percentage of regional-areal geographers in Canada (12.35% in the U.S. near that time). As of 2002, each of these three specialty categories had lost membership, while still

retaining key status within human geography. These losses (particularly economic-industrial development which lost 23 faculty, falling to 6.91%) occurred during a period of modest decline in human geography in Canada and were accompanied by small reductions in faculty in more peripheral human geography specialties, including cultural, historical and planning. As in the U.S., the number of Canadian geographers specializing in gender-feminism-GLBS grew substantially relative to the other human specialties, comprising the second largest gain overall of a geography subdiscipline at 12 faculty. Finally, Canadian geographers have articulated specializations in both agricultural and rural geography. While these specializations are rare in the United States, critical masses of Canadian researchers express interest in agriculture and rural geographies.

Physical Geography (Table 5): Physical geography expertise in Canadian programs in 1992 is much more geomorphology-centered than in the United States in 1991; geomorphology is clearly prominent at 9.46%. Climatology holds a distinct secondary position at 5.23%, followed by hydrology with 3.86%. Most fascinating is the U.S.-Canada difference in trend during the following decade. By 2002, the most noteworthy leap in microspecialty membership in Canada is in the sister discipline specialties we have defined as geology-ocean, which increased by 38 faculty members to 6.37%. Geology-ocean thus climbs to a secondary position behind geomorphology, which has experienced a modest decline in numbers. In contrast, the rise in geology-ocean faculty in the U.S. has been minimal in geography graduate departments and has not kept pace with the overall growth in physical geography. Interestingly, the number of climatologists in Canadian programs remained steady (slipping to third overall as a function of the geology-ocean growth) from 1992-2002, whereas in the U.S., climatology has become the prominent physical subdiscipline by experiencing the largest raw growth. Finally, while comprising a modest number of physical geographers in both countries and both decades, biogeography in Canada experienced no change during the study period while growing markedly in the U.S.

Human-Environment (Table 6): The number of Canadian graduate faculty claiming expertise in the area of human-environment dynamics was slight in 1992 and changed very little

Table 6: Physical Specialties

	Geomorphology	Soils	Hydrology & Water Resources	Climatology & Meteorology	Biogeography	Geology & Related Specialties
1992	76 9.46%	20 2.49%	31 3.86%	42 5.23%	24 2.99%	10 1.25%
2002	74 8.71%	12 1.41%	40 4.71%	50 5.88%	25 2.94%	51 6.00%
Change	-2	-8	9	8	1	41

Table 7: Human-Environment Specialties

	Conservation & Resource Policy	Natural Hazards	Political-Ecology & Cultural-Ecology	Anthropology & Related Fields	Environmental Perception & Behavioral	Landscape Ecology	Environmental Planning & Management
1992	30 3.74%	7 0.87%	17 2.12%	1 0.12%	14 1.74%	14 1.74%	8 1.00%
2002	39 4.59%	6 0.71%	29 3.41%	3 0.35%	14 1.65%	7 0.82%	8 0.94%
Change	9	-1	12	2	0	-7	0

Table 8: Geo-Techniques and Other Specialties

	Cartography & Computer Mapping	GIS	Remote Sensing	GPS	Air Photo	Geo-Education	Tourism & Recreation	Other
1992	19 2.37%	20 2.49%	29 3.61%	0 0.00%	3 0.37%	2 0.25%	19 2.37%	20 2.49%
2002	8 0.94%	50 5.88%	29 3.41%	0 0.00%	0 0.00%	0 0.00%	16 1.88%	6 0.71%
Change	-11	30	0	0	-3	-2	-3	-14

by 2002, growing noticeably only in the area of political/cultural/historical-ecology. The decadal differences for the remaining human-environment micro-specializations are flat or negative, unlike the U.S. trends in the human-environment category, which showed aggressive gains in all areas except environmental perception-behavioral. In general, one of the key growth areas in the United States tends to be the broad area of human-environmental interactions and the specific collection of specializations that have emerged within this class. As such, the Canadian case is distinct.

Geotechniques (Table 7): In terms of geotechnical micro-specialists, Canadian geography shrank in all areas save GIS, which rose from 2.49% to 5.58% of geographers during the study period. Remote sensing also remained relatively steady during a decade of reduction in geographers, declining by only four faculty members. Similar to the situation in the United States, Canadian geographers in GIS, by percentage, are second in overall significance only to economic-industrial-development geographers.

Other Categories & Canadian Specialties (Table 8): In categories related to geography or difficult to classify, Canadian geographers declined in number from 1992 to 2002. Specialists in fields that did not match our categories fell from 2.49% to 0.80%, while tourism-recreation experts fell from 2.37% to 1.46% of all geographers. Declared specialization in geo-education, quite small in 1992, vanished from Canadian graduate programs by 2002.

Beyond the other categories, Canadian programs have distinct regional specializations that are unique from programs in the United States. Moreover, the decidedly “Canadian” specializations can be observed in both physical and human lines. Specifically, most Canadian graduate programs have one or more faculty with specific specializations or interests in the following areas:

- Northern Studies (region/area)
- Aboriginal/First Nations Studies (culture, political ecology, and cultural ecology)

- Arctic (processes and the region)
- Ice (processes)

While it should not be surprising that Canadian departments reflect their surroundings, the explicit linkage between program and region is not readily discernable in the United States and, in the case of major research institutions, strategically absent. Indeed, graduate programs—particularly PhD programs—in the United States seldom reflect their regional context. In addition to the broad trends that reflect Canadian regional themes across the country, a more regionalized research interest in Francophone studies can be observed in the eastern provinces (i.e., Maritimes, Ontario, and Quebec). In either case, these specialties and their inherent link to regional or local interests are seldom observed in U.S. PhD programs.

Summary

Academic geography in Canada remains focused in large “geography” departments. Whereas departments and programs in United States have been characterized by a proliferation of micro-specializations, Canadian programs have tended to focus more closely on the core sub-disciplines of the discipline. But like the United States, the overall strength of discipline appears to be stable and slightly expanding as indicated by the growth in department size. However, it is evident that the overall relative strength and stability of the discipline in Canada is greater and its inter- and intra-institutional positionality relative to other social and natural sciences more secure. This stands in stark contrast to recent trends in the United State’s community of academic geographers to transcend traditional boundaries, blur the identities of the sciences and humanities, and establish an ever-growing collection of micro-specializations which may undermine geography’s historic role in the academy.

Endnotes

1 While a longer study period would have been optimal, total ‘missing’ departments increases significantly past 10-years. For this reason, we do not feel that the time interval is a methodological shortcoming.

2 The Canadian AAG Guide data are generally consistent with those reported in the “CAG Directory” (Rasid 1999) and noted by Boots (2000). While we recognize that the AAG Guide data are not exactly the same as the CAG Directory, comparative analysis requires a parallel methodology be used.

3 While some faculty list as many as eight specialties, a single faculty member’s ability to contribute to multiple specializations is inherently uneven. To that end, micro-specializations are limited to two areas. In fact, two is the largest number of possible specializations that would reasonably be ‘universal’ as many individuals limit their areas to two.

However, this limitation is of limited importance in relative terms as many listed items are inter-dependent and/or lists of specific regions of interest. To that end, the assignment of micro-specializations is based on the relative ranking (assuming a rank order left to right) of identified areas and the related ‘inter-dependence’ within and between stated specializations. Every effort has been taken to distill the essence of faculty interests into core areas that are consistent with a faculty’s macro-specialization (human, human-environment, physical, and geo-techniques). Ultimately, the classification of individual faculty was based on the shared interpretation of the researchers.

4 Comparative data were produced only for those programs list in both volumes of the *AAG Guide*. Overall, comparative data exists for 24 programs with one verified department elimination. Waterloo-Wilfred Laurier data are combined for 2002.

5 Graeme Wynn’s (1999, p. 221) paper clearly identifies social science discipline as the “sibling” disciplines of geography. This perspective is supported by the administrative geography of the discipline’s departments as based on a survey of university web pages.

6 In Canada, like the U.S., environmental “studies” (opposed to environmental “science”) tends to be more closely associated with human-centered environmental research.

7 The authors are indebted to the insights of the reviewer, editor, and Patrick Lawrence on this specific point.

8 Based solely on the 1992-2002 comparison of the *AAG Guide*. Other programs may have emerged or devolved—however they were not included in both Guides and comparative analysis is unable to be performed.

9 We are indebted to Patrick Lawrence for his insight into the W-WLU case.

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