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## Mapping the Canadian library and information science research landscape (Paper)

### Abstract

This work-in-progress paper aims to map the scholarship produced by the eight Canadian Library and Information Science (LIS) schools. After using the citation network to divide publications into several research areas, we analyze how the research output of different LIS schools is distributed across these areas, in an attempt to shed light on the schools' specificities and commonalities and how each school contributes to the global picture of Canadian LIS research.

### 1. Introduction

Information Science has been defined by Borko (1968) as “a discipline that investigates the properties and behaviour of information” concerned with the “origination, collection, organization, storage, retrieval, interpretation, transmission, transformation, and utilization of information”. Because information is inherent to every discipline of research, Bates (1999) referred to information science as a meta-field. Empirical investigations of LIS have highlighted its multidisciplinary nature (Aharony, 2012; Chua & Yang, 2008; Onyancha, 2018; Paul-Hus et al., 2016), as well as the gradual shift of the field's focus from libraries to a more diverse range of topics such as information technologies, knowledge management, and bibliometrics (Chua & Yang, 2008; Figuerola et al., 2017; Larivière et al., 2012; Ma & Lund, 2020; Onyancha, 2018). yet these previous studies all suffer from the same limitation: despite acknowledging the multidisciplinary nature of the field, they tend to ignore the differences in publication practices that characterize the disciplines composing the field and the potential biases that may result from these differences. For instance, they often use journal classifications to delineate the field, which

can lead to both the inclusion of non-LIS articles published in multidisciplinary journals and the exclusion of LIS research published in non-LIS journals. Adopting an affiliation-based approach to mitigate these limitations, this work-in-progress delves into the composition of the Canadian LIS research landscape and highlights the specific role played by individual schools within it.

## 2. Data and methods

We collected the list of current Faculty members and Ph.D. students from the websites of the eight Canadian ALA-accredited LIS schools (American Library Association, 2020), and then retrieved their publications from the Web of Science. We used this first step to generate a list of department names (which are not controlled in the WoS and may thus vary), which we used to expand our dataset to include all articles published by previous faculty members or students that are no longer affiliated to the school and may thus not be listed on their website anymore. The resulting dataset is summarized in Table 1.

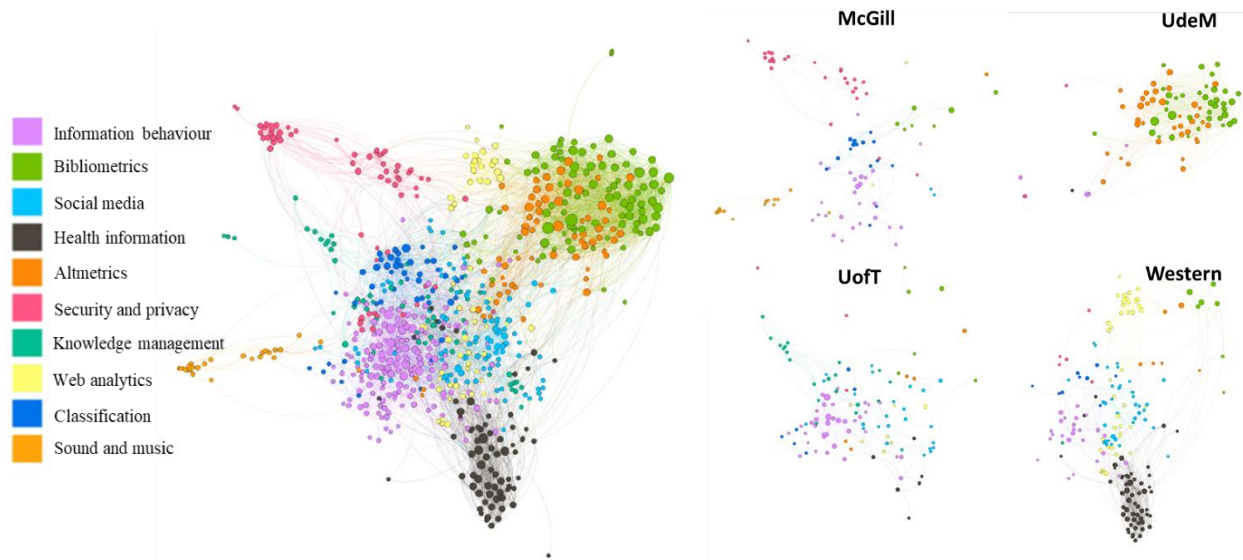
Table 1. Number of authors and publications identified for the eight Canadian LIS Schools

<b>Institution</b>	<b>Number of authors</b>	<b>Number of publications</b>
Dalhousie University (Dal)	31	49
McGill University (McGill)	79	165
University of Alberta (UofA)	35	62
University of British Columbia (UBC)	43	60
Université de Montréal (UdeM)	46	132
University of Ottawa (uOttawa)	13	24
University of Toronto (UofT)	125	220
University of Western Ontario (Western)	105	258
All Universities	404	941

We mapped the Canadian LIS research landscape using the hybrid approach of Boyack and Klavans (2010), which combines bibliographic coupling and the words in the title and abstracts to calculate the weight of the network links. In our approach, we use TF-IDF to give more weight to rare words. In the resulting graph, each node represents a publication and belongs to one of twelve clusters identified by the Louvain algorithm (Bonnel et al., 2008) with the resolution parameter set at 1.0 (Lambiotte et al., 2014) in Gephi. The labels of the clusters were chosen by ourselves, based on the titles of the publications in the clusters.

## 3. Results

The global map of Canadian LIS research is shown in figure 1. The four networks on the right are limited to publications of a specific LIS school. It indicates that the Canadian landscape of LIS research is the outcome of the schools' distinct research focus, as opposed to a uniform distribution of papers across research areas.



One issue with maps such as the ones presented in Figure 1 is that they do not take into account the different publication practices across research areas, giving more visibility to the (typically quantitative) areas where publication rates might be higher. Moreover, and especially when working with relatively small datasets as is the case here, these maps can be greatly influenced by the outputs of a few very prolific scholars. To mitigate this, we took individual researchers and calculated the relative frequency distribution of their research output across the research areas. This way, every researcher has an equal weight. Then, for each university, we calculated the relative frequency distribution of researchers across research areas, so that every school has the same weight. The average share of researchers in a research area thus provides a denominator to calculate the specialization index for each school-research area combination. A score below or above 1 respectively indicates a lower or higher than average number of researchers working in a specific area. Table 2 shows the respective areas of specialization of the eight Canadian LIS schools. We can see that the larger schools tend to cover a larger range of research, but still specialize in different areas. Smaller schools tend not to cover all the research areas, and thus tend to have higher specialization scores in the areas where they are active.

Table 2. Specialization of Canadian LIS departments based on researchers

Cluster	Dal	McGill	UofA	UBC	UdeM	UofO	UofT	Western
Information behaviour	0.85	1.17	1.64	1.05	0.68	1.10	1.17	0.72
Classification	2.03	1.20	1.29	0.68	1.27	0.00	0.71	0.94
Bibliometrics	0.51	1.53	0.65	0.36	2.00	2.99	0.48	0.32
Altmetrics	1.36	0.56	0.53	0.56	2.00	1.18	0.89	0.97
Web and social media	1.85	0.07	0.80	1.12	0.44	0.90	1.67	1.31
Health information	0.00	0.67	1.10	0.81	0.60	1.23	0.90	1.88
Security and privacy	0.00	1.89	0.00	1.99	1.15	0.00	0.87	0.86
Knowledge management	1.61	0.00	2.52	1.76	0.00	0.54	1.69	0.90
Web analytics	0.00	0.99	0.00	0.57	0.00	0.00	1.27	2.64
Sound and music	0.00	3.16	0.00	4.77	0.00	0.00	0.00	0.00

## 4. Conclusion

Our results showed that the landscape in LIS research in Canada is built from the superposition of the schools' heterogeneous research focuses rather than homogeneous distributions of research outputs across the different areas of research. This research in progress is currently limited to Web of Science data, which does not exhaustively cover the literature in the field (Meho & Spurgin, 2005) may introduce some biases in the coverage (Mongeon & Paul-Hus, 2016). The dataset is currently being expanded to include publications found in other databases and the researchers' CVs. Ultimately, our goal is to produce the first-ever comprehensive open dataset of Canadian LIS research publications, so that it can be used to better understand the field and its history.

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