Brief on Research and Scientific Publication in French

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Introduction

Science has historically been a place where multiple languages coexisted. For example, Marie Curie's most important discoveries were disseminated in French, Ernest Rutherford's in English, and Albert Einstein's in German. However, since the end of the Second World War, and even more so since the fall of the Soviet Union, there has been a decline in the use of languages other than English in the dissemination of knowledge, both in Canada and elsewhere, with serious consequences for the science community and society.

This brief presents data on science in French, the consequences of its decline, and possible solutions. It is divided into three parts. The first part examines the status of French in Canadian and international science and explains its causes and background. The second part explains the consequences of the decline of French and, more generally, the lack of diversity in the language used for disseminating knowledge. Lastly, the third part makes a series of recommendations to the federal government in order to restore a certain linguistic balance in Canadian science.

Assessment

Although some researchers tried to make Esperanto — a politically neutral language — the language of science in the early 20th century, it never took off, given the balance of power and geopolitics associated with the role of language in science. Moreover, although internationally there were a significant number of new French-language scholarly journals until the 1910s, their proportion has decreased since then. In Canada, the vast majority of newly created journals (around 90%) are in English, and that proportion has increased since 2010.[1] In terms of scholarly articles in English, the

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[1] Larivière, V. (2018). "The status of French as a second language. About the evolution of the places and languages of publication of Quebec, French and German researchers." *Recherches sociographiques*, 59(3), 339–363. [AVAILABLE IN FRENCH ONLY]

numbers are quite clear: between 1995 and 2019, their proportion increased from 64% to more than 90% worldwide. French, on the other hand, went from just under 10% to 1% during the same period. Some languages have increased in importance, such as Portuguese, mainly as a result of the growth of the SciELO journal platform in the late 1990s. SciELO is funded by Brazilian funding agency FAPESP, and its journals are recognized by the Brazilian evaluation system.[2] The decline of languages other than English began in the natural sciences (physics, chemistry and mathematics), where the very nature of research (phenomena, methods, topics) makes it more internationalized than in other fields; a common language therefore emerged earlier. However, the decline has continued for the last 30 years in the social sciences and humanities, where study topics are, by nature, more local and related to a specific context, which has certain consequences on the very nature of the research work. In addition, maintaining critical masses of researchers/readers in certain linguistic areas can ensure that research thrives in languages other than English in disciplines such as law, where particular analytical or normative frameworks continue to be widely shared. However, this is more the exception than the rule.

The decline of French is following a similar trend in Canada, although French has retained a larger share here. This is reflected differently in each field. In the last 40 years, the percentage of articles in English has increased exponentially in the medical and natural sciences, accounting for nearly 100% of Canadian articles. In the social sciences, the percentage is lower, hovering around 95%, and is around 90% in the arts and humanities. For Quebec researchers, these percentages are lower, mainly in the social sciences and humanities. In 2015, 70% of social science articles were in English, as were 30% of arts and humanities articles. While the trend in the arts and humanities has been fairly stable over time, the decline in the social sciences has been substantial, whereas less than 50% of the province's articles were in English in 1980.[3]

The study conducted for Acfas shows how journals in each of Canada's two national languages are not valued the same, contributing to the decline of French. In addition to being a means of knowledge dissemination, scholarly journals also help build reputations, which can further scientists' careers. In almost all fields, French-language journals (and conferences) are considered less prestigious, making them less attractive to authors.[4] This growing lack of symbolic capital increasingly penalizes publishing in French, whereby research published in that language is perceived as being of lower quality, more local, or having less impact. This study also highlights the decline of grant and scholarship applications submitted in French, and their often lower success rate than those in English, which encourages writing applications in that language. There is obviously a connection between the language of scholarly literature and the language of applications; if the literature in a field is largely in English, it will be easier

[2] Larivière, V., Riddles, A. (2021). "Langues de diffusion des connaissances : quelle place reste-t-il pour le français?" *Découvrir. Le magazine de l'ACFAS*. November 2021. https://www.acfas.ca/publications/magazine/2021/11/langues-diffusion-connaissances-quelle-place-reste-t-ilfrancais [AVAILABLE IN FRENCH ONLY]

[3] Larivière, V. (2018). The status of French as a second language. About the evolution of the places and languages of publication of Quebec, French and German researchers. *Recherches sociographiques*, 59(3), 339–363. [AVAILABLE IN FRENCH ONLY]

[4] St-Onge, S., Forgues, É., Larivière, V., Riddles, A., Volkanova, V. (2021). *Portrait et défis de la recherche en français en contexte minoritaire au Canada*. Montréal: ACFAS, 137 p. https://www.acfas.ca/sites/default/files/documents_utiles/rapport_francophonie_final_1.pdf [AVAILABLE IN FRENCH ONLY]

to write the funding application in that language. These data are particularly worrisome for French-language universities because they show the effect of the devaluation of French as a scientific language, first upstream, via applications for grants and scholarships, then downstream, through less funding for research in French.

Consequences

The decline of French in knowledge dissemination has consequences. **The first consequence is unequal access to knowledge for Canadian francophone communities.** There are much fewer scholarly documents in French than in English for researchers, students, practitioners and members of the public who, keep in mind, contribute to the very existence of research activities through their taxes. This makes accessing scholarly documents more difficult not only for doctors and lawyers, but also for teachers, social workers and psychologists. This unequal access affects knowledge mobilization: How can research have a concrete impact on the public through science if science is expressed in a language that does not reach a quarter of the population? Therefore, the deficit of science mobilization in French in Canada becomes a barrier to science as a driver of social and economic development. This deficit is further increased by the virtually systematic and, therefore, almost systemic overshadowing of French-language literature by Canadian anglophone authors, either because of the low rate of mastery of both official languages outside certain segments of the country, or because of the symbolic devaluation of the relevance, or even the quality, of French-language scientific literature.[5]

The second consequence is unequal access to scholarly publication for francophone researchers, and the penalty associated with publication in French. First, writing articles in English requires additional effort from francophone researchers and, second, English-language articles are more difficult for francophone communities to understand.

The third consequence is the declining value of research topics associated with French or French-language dissemination. In order to have their articles accepted in English-language journals, francophone researchers — particularly in the social sciences and humanities — often have to work on study topics that are more "international" or "Anglo-American" rather than topics related to their own communities.[6] This decline in the symbolic value associated with more "local" topics — "local" often being reduced to anything that is not Anglo-American or that meets the predominant standards within the Anglo-American cultural area — makes these topics less interesting to researchers and, as a result, reduces the production of knowledge on the country's francophone communities and on topics associated with them. [7]

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[5] For example, the systemic underrepresentation of francophone authors in Canadian political science has been documented: Daoust, J. F., Gagnon, A. G., & Galipeau, T. (2022). "Language Matters: The Study of Canadian Politics through an Exploration of Syllabi and Comprehensive Exams." *Canadian Journal of Political Science/Revue canadienne de science politique*, 1–19.

[6] Larivière, V. (2018). "The status of French as a second language. About the evolution of the places and languages of publication of Quebec, French and German researchers." *Recherches sociographiques*, 59(3), 339–363. [AVAILABLE IN FRENCH ONLY]

[7] There is frequent criticism of the eurocentrism of science, which has marginalized or overshadowed the "epistemologies of the South," to quote Santos, but this eurocentrism is looking more and more like anglocentrism. See: De Sousa Santos, B. (2011). "Epistemologies of the South." *Études rurales*, 187, 21–49. [AVAILABLE IN FRENCH ONLY]

There is therefore an accumulated deficit for the country's francophone communities: they do not have access to knowledge, and the issues that affect them are less likely to be studied, so these minority communities continue to see their realities ignored by the majority.

More generally, the language in which articles are published affects universities' international rankings. In fact, these rankings are based largely on English-language publications in international journals. Although these rankings have been widely criticized for good reason,[8] the fact remains that they often serve as domestic and international showcases for universities, helping to form a perception of the relative importance of the country's universities. **Therefore, the fourth consequence is related to these rankings that penalize French-language universities, since a smaller share of their scholarly production is considered in their ranking.**

Lastly, the Canadian science community is in a unique position compared with other multilingual communities. As mentioned, the shift to English can be seen in most countries. However, in the case of other multilingual countries (such as Belgium and Switzerland), English is not an official language. The science community's shift to English is not likely to change the country's linguistic balance, whereas in Canada, the growth of English complements other areas of society where French is in decline. **The fifth consequence relates to the fundamental asymmetry in the balance of power between Canada's two official languages, which is in a way naturalized and depoliticized by an international scientific context.**

Conclusion: federal government actions

We propose a number of actions that can be taken by the federal government, either directly or through the granting agencies. These actions are aimed at both influencing the behaviours and practices of researchers through greater recognition of the symbolic value of publication in French, and using new technologies to increase dissemination, discoverability and, therefore, accessibility. These actions would help fulfill the federal government's vital mission of preserving the symbolic and practical importance of one of Canada's two official languages, with a view to promoting their substantive equality.

Researchers respond to incentives and other mechanisms for evaluating research. Granting agency review committees place a great deal of weight on applicants' CVs, in which certain markers of prestige — the language of the journal, its publishing house and its impact factor — are often used to evaluate the quality of the application.

(1)   In order to reduce the language bias associated with these markers, we recommend that places of publication not be considered as legitimate criteria for quality and that the project's intrinsic quality be given greater weight than the applicant's prior experience and associated prestige markers. Such an approach has been shown to reduce gender bias in evaluating applications.[9]

(2)   Similarly, it will also be necessary to ensure that French-language applications are evaluated the same way as English-language applications, and that both external reviewers and committee

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[8] Gingras, Y. (2008). "La fièvre de l'évaluation de la recherche. Du mauvais usage de faux indicateurs"<. Centre universitaire de recherche sur la science et la technologie.
http://www.sauvonslarecherche.fr/IMG/pdf/Evaluation_Quebec_Gringras.pdf [AVAILABLE IN FRENCH ONLY]

[9] Witteman, H. O., Hendricks, M., Straus, S., & Tannenbaum, C. (2019). "Are gender gaps due to evaluations of the applicant or the science? A natural experiment at a national funding agency." *The Lancet*, *393*(10171), 531–540.

members have sufficient knowledge of French to carry out such evaluations. There is no reason why the success rate of French-language applications — for both scholarships and grants —should not be the same as that of English-language applications. Therefore, granting agencies must ensure parity (as they do for the gender of applicants).

(3) **The federal government must also ensure that the visa applications of international students from francophone countries are evaluated fairly in relation to those from other countries.** Unequal visa opportunities for francophone students — mainly from Africa —predominantly affects French-language universities by reducing access to their main pools of international students.

(4) **The federal government must also increase the discoverability of French-language content.** The recommendation algorithms of the various platforms are biased in favour of English-language content, which is easier to find. The federal government must invest in solutions to these algorithmic biases, which would restore the linguistic balance in content discoverability. In doing so, it would not only contribute to the vitality and dissemination of science in French in Canada but also internationally. Anything to counter these algorithmic biases would indeed have an impact on the global francophone community, of which Canada is a leader. This would also be in keeping with the spirit of the UNESCO *Universal Declaration on Cultural Diversity*, of which Canada was a strong proponent when it was adopted.

(5) **Lastly, the federal government must invest in tools for translating scientific texts.** Having such tools will enable authors to write and publish their texts in the language of their choice, and readers to read any text without language barriers.