

Reorganizing Canadian Research Evaluation through Metadata in the Digital Era

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Between Economy and Democracy: Reorganizing Research Evaluation through Metadata in the Digital Era – REREV

- Four-country study funded by SSHRC under the *Open Research Area for the Social Sciences - Round 8* call.
 - Canada, France, Germany, and the UK

Objectives

- Study the competition between commercial and open data providers, and how technological dependencies affect their epistemic framings of research quality.
- Conduct a comparative analysis of how research administrators in different countries integrate commercial and open data analytics into their research evaluation systems.



Intro to datafication

- Datafication is the transformation of social characteristics and practices into machine-readable and machine-processable data (Mayer-Schönberger & Cukier, 2013; Van Dijck, 2014; Krenn & Krüger, 2024)
 - Reduction of information to the machine-readable.
 - Exclusion of non-machine-readable information.
- Quantification: operationalization and creation of indicators and metrics (~causation)
- Datafication: data production as an automated by-product of digital activities (correlation)
- Assetization of data (Birch & Muniesa, 2020)
 - Making data valuable through “data activation regimes” (Beauvisage & Mellet, 2020) or “techcraft” (Birch et al., 2021)
 - “off-label” use (Rona-Tas 2017): purposes independent from its context of production

Digital infrastructure perspective on indicators

- The scientific indicator literature traditionally focuses on the construction and use of indicators as value-laden and context-sensitive tools for research evaluation (Barré, 2019).
- Digital infrastructure enables and shapes the practices of measuring academic performance (Krüger & Petershon, 2022).
- The technical capabilities and constraints of the bibliometric tools, as determined by their providers, frame how evaluative bibliometrics can be conducted.
 - Choices about which data are recorded, included, and how tools are connected set the table for evaluation.
- Metadata systems are more than “theory-laden” – cultural, political, strategic, and economic frameworks underlie which content is included in metadata systems and analytical tools.
- When the providers of bibliometric tools also own some or all of the information underlying their tools, there exists an incentive to “assetise” their proprietary data (Birch et al., 2021; Birch & Muniesa, 2020).

Research Questions: Canada

- To what extent and in what ways are metadata used for research evaluation and analytics in Canada?
- What are the sources of metadata used, and what information do they contain?
- What factors, including support for open-data infrastructures, may influence the organisational choice of research information system?

Data Collection

- 45 to 60-minute, semi-structured interviews
- 32 interviews conducted from November 2025 to April 2026
 - University leaders: 15 interviews
 - Provincial research offices: 6 interviews
 - Federal research funders: 9 interviews
 - Centres and networks: 2 interviews
- ~50% of the total interviews we hope to collect for the study
- Parallel projects in France, Germany, and the UK

REREV Canada:

Early findings on metadata use

Patterns of external metadata use

- No systematic use for strategic management in universities or funding agencies.
 - “**Frankly, I don’t know** how much they’re using it to make decisions. The majority of the work that I’m doing right now is about supporting researchers to increase the likelihood of them receiving funding.” (University bibliometrics librarian)
- Funding agencies use them for program/field-level, multi-year analyses.
 - “We **don’t really collect information on bibliometrics**. The question is [for grantees], ‘Have you published?’ And we can then, behind the scenes, do our own bibliometric analysis.” (Funding agency leader)
- External data is not used for individual-level evaluation, only centre or aggregate
 - “We’re supporting **formal five-year evaluations**, and at research centres as well. In terms of individual research evaluation, I don't think most of what we're doing is feeding into those processes at the moment.” (University admin)

Bibliometric indicators and metadata systems are not commonly used for research evaluation and analytics in Canada.

Alternatives to external metadata

- Internal research information databases
 - [Regarding their university system's grant proposal database:] “You get all the applications, and all the funding that has been granted. You can see your success rate. You can see the amounts. They're building a new version of it to bring up a bit of AI, to search into the project description to see what the expertise is.” (University admin)
- Non-use of data for management
 - “All the professors have to provide their full CV and publications during the year. As long as everything looks good, we don't use them for generating data. We could if we needed to. I don't know if we ever felt that we did.” (University admin)

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Rationale for the choice of system

➤ Cost

- “Realistically, I think [switching to OpenAlex] was mostly about finance... The insane cost of SciVal was the big motivator.” (University bibliometrics librarian)

➤ Performance

- “We made the decision to add manpower to maintain our in-house system until we find a vendor that provides us with what we need to do.” (University admin)

➤ Usefulness

- “There are things that we can do inside of *Elements*, in terms of monitoring compliance with open-access, that we would love to do, but we haven’t even talked about with anyone... If [the Tri-agencies send] a very strong mandate, that’s an opportunity for us to **actually use the system** to provide more value as well.” (University admin)

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Multilingualism as a barrier to technology adoption

- “Often, we have to **exclude software solutions** if they're **not available in French** as well... Everything that is unilingual requires special approval from the Vice President for Francophone Affairs. And not many things get through unless there are very exceptional circumstances.” (University admin)
- [Chestnut University] developed a custom, in-house RIMS to avoid “vendor issues” regarding **limited support and availability** for bilingual RIMS. (University admin)
- “There’s the bilingual question. [*ResearchFish* was] developed in an English-only context, and it would certainly **need to be bilingual** in the Canadian context. So, for those reasons, we decided not to pursue it... It really wasn’t satisfying the needs that we had.” (Funding agency leader)

Many universities and the federal government require software to be bilingual, hindering or preventing product entry into the Canadian ecosystem.

Valuation and evaluation

Recognition (and prioritization) of non-article research outputs

- "We have to be able to tell [politicians] what is interesting... and **where the value is**, and narrative is really a big part of that." (Provincial official)
- "Aspects of knowledge mobilization are really hard to capture. I'm **not sure we'll ever, honestly, have a great mechanism** to do that." (University admin)
- "What really came up loud and clear for the local impact for a regional innovation network was **establishing trusted relationships in the region**, to move to outcomes and impact. It was all trust and relationality. That was understanding how outcomes and impacts were being taken up locally. But typically, funders don't ask about the trust. (Provincial official)

Knowledge mobilization: commercialization, community engagement, healthcare practice, etc.

Demonstrating research “impact” to policymakers

- “We are under external pressure to demonstrate research impact – **narrative stories of impact**, especially clinical practice change in medical research, patents, and clinical trials. Publications are not everything.” (University admin)
- “Through our investments, **are we seeing greater innovation**, or new companies, new technologies that not only are being developed, but also are creating new economies here? Which means that they have to develop the thing, the thing has to become commercialized, and the commercialized entity stays within the province.” (Provincial official)
- “We’re also focused on projects that **have impact in the province**, so things that are maybe a little less typical academic outcomes, and more partnerships formed. The knowledge mobilization, **delivering research outcomes to knowledge users and community**, that type of thing, is where we see some of the value as well...” (Provincial official)

“Narrative” is where the value is.

Widespread support for DORA and CoARA principles

- In an ideal world, it's mixed methods, right? You have quantitative data that you're able to pull from data sources such as *Dimensions*... But we also **put equal value in the stories** and the information we're capturing from the people that we fund. (Provincial official)
- Narrative CV implementation
 - “To me, the theory is, through the narrative CV, [we are] **making it clear** to the early career researcher out there, ‘No, the agencies are not looking for your list of publications. They’re looking for **your research contributions**.’ If that was what you kept saying was your incentive for not publishing open access, for not publishing in French, for not doing policy outreach, all these things that we want the research ecosystem to do more of, those types of things. Every time I go to the community, there’s, ‘Well, the agencies want this,’ and they’ll say this.” (Funding agency leader)

Responsible research assessment

Discussion

Use of metadata in evaluation

- The use of externally-sourced metadata for research evaluation is an uncommon practice in Canada, only conducted on high-level evaluations.
- Evaluation of individual researchers in Canada relies almost entirely on self-reported data.
- Proprietary research information management systems are considered to be poor value for money by many Canadian universities.
- There is growing interest in software and data systems to automate the tracking of the inputs, outputs, and outcomes of research activities, particularly as existing systems reach their end-of-life.
- Open metadata systems are not yet a mature topic of discussion in Canadian science policy.

Barriers to technology adoption

- Legal, political, and other commitments hinder the use of many research information management software products by Canadian institutions.
 - Data sovereignty
- Political, legal, and cultural protections for the French as a minority language limit the use of bibliometric research evaluation and the entry of new RIMS into Canada.
- Commitments to multilingualism can prevent technologies and associated concepts from entering research evaluation ecosystems.

Conclusions

- › Canada's lack of a national evaluation system is neither a good nor a bad thing in and of itself.
- › The lack of a clear, national strategy for science leads to many interpretations of what outcomes and outputs for research matter.
- › Powerful software tools exist for monitoring research activities and outcomes, but have mostly not been deployed in Canada.
- › These tools do not always reflect what is currently thought to hold value in Canadian research evaluation and may not be well-suited to tracking knowledge mobilization outcomes.

Questions?

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