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# Language Technologies in Scholarly Communication: Findings from a Systematic Review

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# Context

- English has occupied a **privileged** position in scholarly communication for decades.
- Single-language model has **inequities**:
  - It requires more time and effort for non-Anglophones to read, publish, or present in English (Amano et al., 2023).
  - Exclude contributions from speakers of other languages (Habibie & Hultgren, 2022).
- Interest in **multilingual scholarly communication**.
  - e.g. Helsinki Initiative for Multilingual Scholarly Communication (2019), UNESCO Recommendation on Open Science (2021)



*Image Credit: PublishersGlobal*

# Challenge

- If we all contribute to research in **our own language**, how do we **discover and read** each other's work?
- The introduction of free **AI-based data-driven tools** (e.g. Google Translate, ChatGPT) has helped to improve access to translation.
  - But are these tools used/useful for **scholarly communication**?

Google Translate



DeepL



Microsoft Translator



Baidu Translate



Amazon Translate



*Image Credit: Redokun*

# Objectives of the study

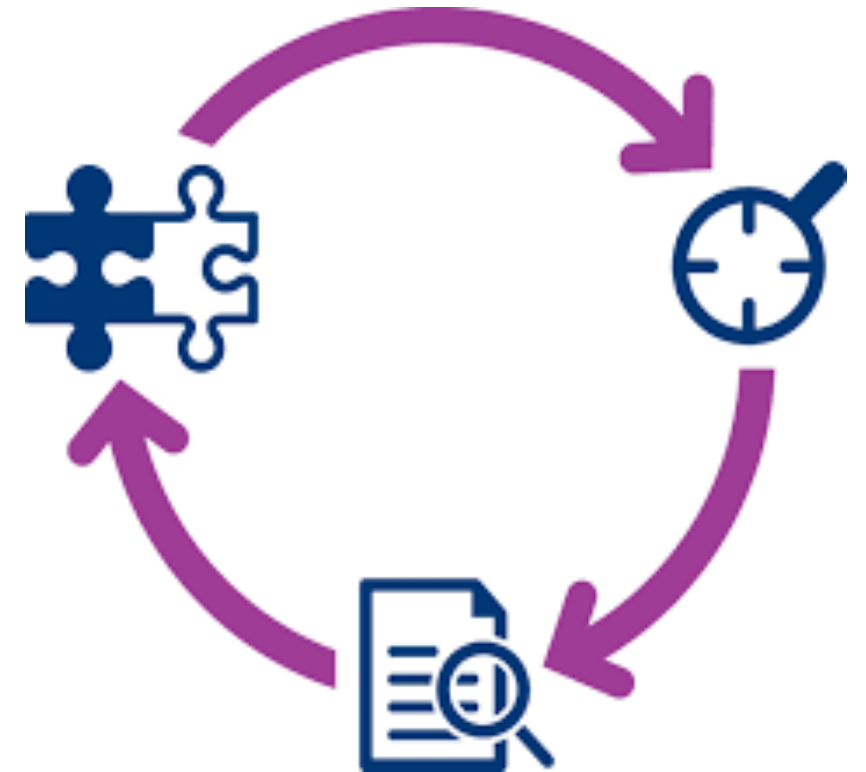
- ***Overarching question:*** “How are translation technologies being used for multilingual scholarly communication in Canada and beyond?”



***Image Credit: Flaticon***

# Methods - approach

- **Systematic review**
  - It has the potential to produce a reliable knowledge synthesis in a systematic and reproducible way (Briner & Denyer, 2012).
- **Inclusion criteria – studies focus on:**
  - Automatic translation AND
  - Scholarly communication context AND
  - Application and use by and for scholars.



*Image Credit: Cochrane Community*

# Methods – sources and records

- We developed search query:
  - Applied in **nine bibliographic databases**: Scopus, Web of Science core collections, ERIC, Dimensions, Erudit etc.
  - Conducted in **four languages**: English, French, Spanish, and Polish.
- Retrieved a total of **875 items** published between January 2017 and September 2023.
- Included **40 studies** for qualitative analysis.



*Image Credit: Nature*

# Results – translation tools use

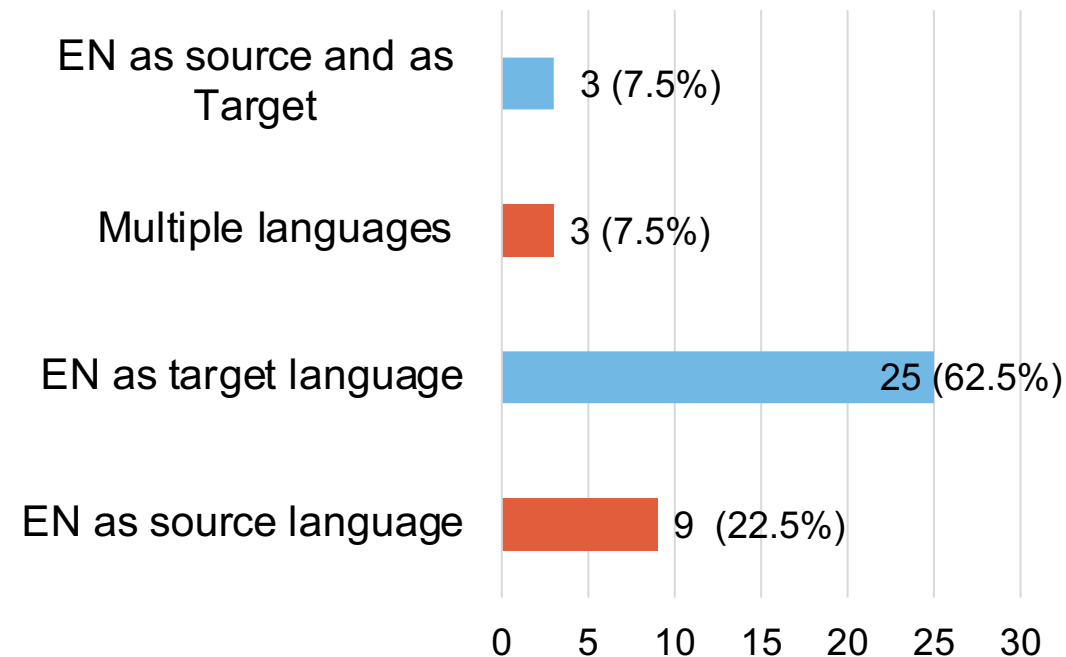
- **Neural machine translation** (esp. Google Translate, n=18, 45%) is the most used tech by scholars.
  - Easily **accessible** and **free of charge**, can translate in more than **130 languages** (Winiharti & Sudana, 2021).
- **LLMs** are *emerging* as tools of interest (n=2, 5%)
- **Gaps**: no evidence of combining machine translation with speech technologies or subtitling tools.



*Image Credit: Google Translate*

# Results – translation languages used

- English is **the most used language** (n=40) and esp. as the *target* (n=25), suggesting
  - Translation tools are **not necessarily** helping to **displace** English as the **key language** of scholarly communication.
- **French** included in 8 (20%) studies, 0 Indigenous languages.



*Figure 1: Distribution of studies involving English by translation direction*



# Policy implications

- **Appetite** for publishing in languages beyond English
- **Shift the responsibility** and expectation of non-Anglophone scholars to publish in English:
  - Encourage the use of the tools to **access research in other languages.**
- Large quantity of data and **right kind of data are needed for quality outputs:**
  - Policies that meaningfully support **open access** could help increase availability of quality data corpora.



*Image Credit: [www.lpcentre.com](http://www.lpcentre.com)*

# Conclusions

- Translation technologies can play an important role in ensuring **equity and diversity** in scholarly communication, BUT
- Technology alone is **not enough** to achieve or sustain a multilingual scholarly communication ecosystem.
- Need for more **evidence-based research** about other factors in play (e.g., research evaluation and rewards system).



*Image Credit: Powerslides*

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# Thank you 😊

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