

Lynne Bowker and Jairo Buitrago Ciro
lbowker@uottawa.ca; jbuit008@uottawa.ca

Machine Translation and the Public Library: A Pilot Study with Spanish-speaking Newcomers



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Overview

- Context for the study
- Challenges in providing translation services
- Pilot Project
 - Testing MT systems
 - Survey and Recipient evaluation
- Observations and next steps

Context



- community outreach in public libraries aims to develop programs for non-users, the under-served, and people with special needs within the community
- communities evolve, so libraries must monitor changes and adapt services to meet diverse community needs
- Example of an evolving community:
 - 2011 census reports Canada's population of native Spanish speakers is 439,000, up 32% since 2006
 - of non-official languages used in Canada, Spanish is the 3rd most common (after Punjabi and Chinese)
 - in Ottawa, Spanish is 2nd most frequent (after Arabic)
 - 10,930 Spanish-speakers (1.3% of city's total pop) in 2011, up from 9,860 (1.2%) in 2006



Establishing translation needs of Spanish-speaking immigrants

- Discussions with Ottawa Public Library (OPL) personnel:
 - Acting Manager of Diversity and Accessibility Services (Ms A. Yarrow)
 - Community Outreach Librarian (Ms C. St-Martin)
 - Manager of Digital Services (Mr. C. Ginther)
- a strategy for making a library more accessible to newcomers is to translate the website into languages commonly spoken among local immigrant communities



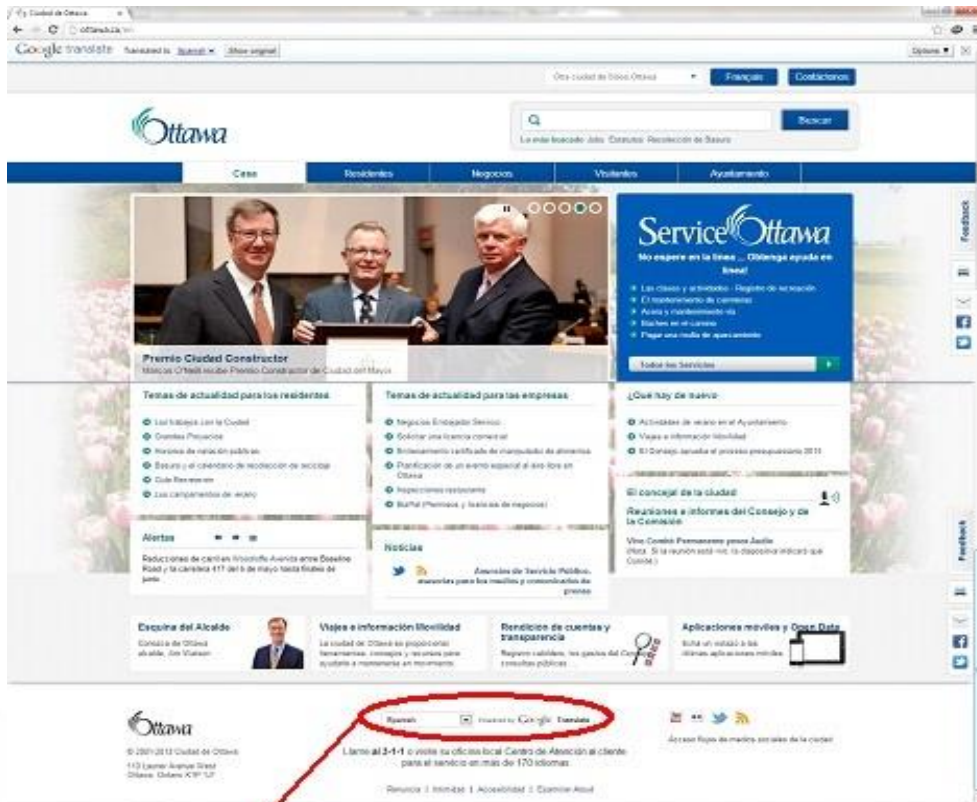
Challenges of translation

- OPL has already translated sections of its site (c. 1000 words) into 9 languages
 - small % of total site
 - dynamic (needs regular updates)
- OPL *wants* to offer more translation, but **cost** and **time** are limiting factors
 - average cost of translation in Canada = \$0.22/word
 - cost of translating 1000 w into 10 lang = \$2200+tax
 - not a “one-off” cost – updates = ongoing commitment
 - translations need to be ready quickly (simship)



Can Machine Translation help?

- IFLA's 2013 [Trend Report](#) flags MT as a technology to watch, raising some interesting questions:
 - “Machine translation will change the way we communicate, but will it increase our understanding?”
 - “What is the cultural impact of using machine translations without the benefit of cultural context?”
- OPL was already discussing whether to integrate Google Translate directly into their site (the City of Ottawa has already done so)
- the City produces site content in both English and French, but users can select a target language and click on “Powered by Google Translate” at the bottom of the page to obtain a machine translation in another language



Disclaimer

The material on this website is provided as general information only and is not intended to provide specific legal advice for any individual and should not be relied upon in that regard. [...]

The City of Ottawa assumes no responsibility for the accuracy of translations that you perform using the Google™ Translate tool. Google™ Translate is a third-party automated translator and, as such, may make mistakes that a skilled human translator would not otherwise make.



Problems with “raw” MT output



- OPL was interested in being compatible with and offering parallel service to other city institutions
- BUT the raw Spanish MT version of the City of Ottawa site contains a number of errors (lexical, syntactic, semantic) and awkward expressions
- OPL had concerns about providing unverified MT to clients (e.g. leads to confusion, poor impression of the institution)
- However, OPL was interested in
 - learning about *post-edited* machine translation
 - a cost-benefit analysis of different translation options
 - learning how different types of translation would be received by members of the newcomer community



Pilot project

- Take an untranslated portion of the OPL website → “Your OPL Card” and its subsections
 - *recommended by OPL as texts regularly consulted and in demand by newcomers*
- Test the viability of 3 MT systems and retain 1
- Produce different versions of translations and track associated time/cost
- Present different versions to members of Spanish newcomer community to determine which best meet their needs



Part I: Testing MT systems

- Take 3 extracts from different parts of the “Your OPL Card” site and translate to Spanish using 3 MT systems
 - Google Translate (statistical)
 - Reverso (rule-based)
 - Systran (hybrid)
- Ask 3 professional translators to compare and rank the raw MT output
 - e.g. based on term choice, syntax, which version would require the least amount of editing
 - Texts were unlabelled & presented in a random order



Comparative rankings of MT system performance

	Google Translate	Reverso	Systran
Txt1-Tr1	1	3	2
Txt1-Tr2	1	3	2
Txt1-Tr3	1	3	2
Txt2-Tr1	1	2	3
Txt2-Tr2	2	1	3
Txt2-Tr3	3	1	2
Txt3-Tr1	1	3	2
Txt3-Tr2	1	3	2
Txt3-Tr3	1	2	3
MODE	1 (7/9)	3 (5/9)	2 (6/9)

Result:
Retain Google Translate for Part II of pilot study.

PART II: Recipient Evaluation



Source Texts

- 3 different extracts selected from the “Your OPL Card” section of the site
 - “Your Library Card”
 - 380 words, informative prose format
 - “FAQs on borrowing materials”
 - 368 words, informative Q & A format
 - “How to place a Hold on a Book, DVD or Music CD”
 - 301 words, instructions

Translated texts



- For each of the 3 texts, 4 different versions were produced:
 - 1) Raw Machine Translation (MT)
 - unedited
 - 2) Rapidly post-edited (RPE) machine translation
 - fixed meaning errors, but not stylistic problems
 - 3) Maximally post-edited (MPE) machine translation
 - fixed meaning & stylistic problems to resemble HT
 - 4) Human Translation (HT)
 - translated from scratch by professional translator
- **Time** & **cost** for producing each version was tracked
 - Rates for translation & editing were taken from OTTIAQ's "2012 Survey of Rates"

Translators/Editors



- Human translation and editing were done by 3 professional translators with comparable experience
 - Native Spanish speakers (Colombian, Costa Rican, Cuban)
 - Immigrants to Canada who had completed graduate-level training in translation at uOttawa and had 3-5 years' experience
- Translation brief and TAUS post-editing guidelines were provided (RPE/MPE)

Each translator/editor was asked to carry out the 3 tasks independently and **in the following order**:



Translator/Editor 1	Translator/Editor 2	Translator/Editor 3
i) Translation of Source Text A	i) Rapid Post-Editing of MT Output A	i) Maximal Post-Editing of MT Output A
ii) Rapid Post-Editing of MT Output B	ii) Maximal Post-Editing of MT Output B	ii) Translation of Source Text B
iii) Maximal Post-Editing of MT Output C	iii) Translation of Source Text C	iii) Rapid Post-Editing of MT Output C



Survey

- Target participants:
 - Spanish-speaking immigrants in the national capital who are users/potential users of library services
- Tool:
 - constructed using an online tool - Fluid Surveys
- Demographic questions:
 - age, sex, language, country of origin, length of time in Canada/capital, level of education, library use...
- Survey was piloted on 4 test subjects from the target community and minor modifications were made to clarify questions



Recipient Evaluation

- Texts and translations were presented in random order
- Each respondent was asked to:
 - 1) Select one of the 3 texts
 - 2) Indicate the reason(s) s/he would like to have the text made available in Spanish
 - 3) Read the 4 translated versions (MT, RPE, MPE, HT) and choose the one that best met their needs
 - 4) Re-read the 4 translated versions alongside the production time/cost information and again choose which one best met their needs



Distribution to target communities

- Invitations distributed with the help of the following:
 - Catholic Immigration Centre of Ottawa
 - Ottawa Community Immigrant Services Organization
 - Embassies of Colombia, Guatemala and Salvador
 - *Mundo en Español* online newspaper (Ottawa edition)
 - Ottawa “Spanish-language meet-up” distribution list
 - 2 local churches offering Spanish-language services
 - University of Ottawa International Office
 - University of Ottawa Dept. of Modern Languages
 - Personal contacts



Survey Results

- 150 respondents began the survey
- 114 completed responses
- Completion rate = 76%
- Average time for completion: 11min, 30 sec
- Period for the survey = 5 weeks: October 25-Nov 27



Profile of respondents (completed responses only)

- **Sex:** 47% men; 53% women
- **Age:** 60% between 31-50yrs; 20% under 30; 20% 50+
- **Country of origin:** 7% Spain, remainder from Latin America, including 30% from Colombia; 18% from Mexico and the rest from 14 other countries
- **Live in Area:** 71% (Ottawa); 29% (Gatineau)
- **Time in Canada:** 34% (less than 2yrs); 28% (2-5yrs), 38% (5+yrs)
- **Reason for coming to Canada:** 57% work; 29% study
- **Intention to stay in Canada:** 75% (10+yrs); 23% (2-10yrs)



- **Education:** 55% have BA or higher; 23% college/trade; 17 % high school; 5% below high school
- **Respondents working in language professions:** 86% (no), 14% yes (including 6 Spanish teachers and 5 translators)
- **Spanish as most dominant language:** 95%
- **Confidence in English:** 19% (poor/v. poor); 21% (fair); 60% (v. good/excellent)
- **Confidence in French:** 53% (poor/v. poor); 11% (fair); 36% (v. good/excellent)



- **Library users:** 67% yes (55% OPL; 12% BMG); 33% no
- **Frequency:** 45% at least 1/mon; 55% less than 1/mon
- **Question:** “If the public library provided a greater volume of information in Spanish as part of their services (e.g. information on their website), would you consult these documents in Spanish?”
 - [i.e. not referring to the *collection* per se, but to service-oriented documents]
 - 75% definitely or very likely
 - 20% maybe
 - 7% unlikely

Reason(s) for wanting the text translated



	Text 1: Your Library Card (26 resp)	Text 2: FAQs (49 resp)	Text 3: Place a Hold on a Book (39 resp)	Average (114 resp)
Don't understand original	12%	10%	5%	9%
Think I understand, but want to verify	32%	15%	29%	24%
I understand, but I can grasp it more quickly in my native language	36%	42%	34%	37%
Trying to improve 2nd language, and want translation as a tool	24%	29%	18%	24%
To preserve my language/culture	12%	6%	16%	11%
To teach others (child)	16%	21%	24%	20%
Other	0%	10%	5%	5%

Results of recipient evaluation



Text 1: Your Card (26 resp)	Time/Cost Unknown	Time/Cost Revealed
MT	4%	19%
RPE	50%	62%
MPE	19%	19%
HT	27%	0%

Text 2: FAQs (49 resp)	Time/Cost Unknown	Time/Cost Revealed
MT	2%	12%
RPE	14%	57%
MPE	27%	18%
HT	57%	12%

Text 3: Place a Hold... (39 resp)	Time/Cost Unknown	Time/Cost Revealed
MT	21%	38%
RPE	23%	46%
MPE	23%	13%
HT	33%	3%

Average of 3 texts (114 resp)	Time/Cost Unknown	Time/Cost Revealed
MT	9%	23%
RPE	25%	54%
MPE	24%	17%
HT	42%	6%

When time/cost known, respondents choosing MT or RPE went up, while those choosing MPE or HT went down. Overall, 77% found MT/MPE offers acceptable quality for their needs and best value for \$

Production time and cost



- Using the averaged times of the 3 translators/editors for the 3 texts
 - HT: 13.3 min/100 words
 - MPE: 9.3 min/100 words
 - RPE: 4.5 min/100 words
- Using the average translation/editing costs from OTTIAQ, this job cost:
 - HT: \$131.42
 - MPE: \$89.59 (saving of \$41.83 over HT)
 - RPE: \$43.88 (saving of \$87.54 over HT)
- When this is x1000s of words x10 languages, the savings add up!



Participants' comments

- Some participants commented that libraries should NOT offer translation into non-official languages, and that immigrants should be required to learn the local language or risk being “ghettoized”
- Others took the opposite view, noting it is helpful for immigrants to begin their integration in “familiar” conditions
- Some respondents said that having a functional translation is better than having no translation at all
- Others suggested that if a translation is going to be provided, the translation should meet the same linguistic standards as the source text



Future work

- Cross-tabbing for a more refined analysis
- Scaling up the study
- Testing other languages, doing comparative studies
- More work on text typology
 - Of the text types tested, the instructional texts appear to be the most amenable to MT/RPE
- “pre-editing” → controlling the input and writing the source text with translation in mind to try to improve the MT output and further reduce the post-editing demands

Lynne.Bowker@uottawa.ca