

## The multilingual challenge in bibliographic description and access

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### ABSTRACT

Cataloguing has taken many steps towards greater internationalisation and inclusion, but one area remains stubbornly intractable: providing transparent access to users despite differences in language of descriptive cataloguing and language of subject access. As constructed according to present cataloguing practices, bibliographic records contain a number of language-dependent elements. This may be inevitable, but does not have to impede access to resources for a user searching in a language other than the language used for cataloguing. When catalogues are set up as multiple unilingual silos, the work of bridging the language barrier is pushed onto the user. Yet providing access through metadata is supposed to be the role of the catalogue. While a full theoretical approach to multilingual metadata is elusive, several pragmatic actions can be implemented to make language less of a barrier in searching and interpreting bibliographic data. Measures can be applied both in the creation of the metadata, and in adjusting the search. Authority control, linked authority files, and controlled vocabularies have an important part to play. Examples and approaches from the context of a newly established catalogue shared by a consortium of English language and French language university libraries in Québec, Canada.

### KEYWORDS

Multilingual catalogues; bilingual cataloguing; bilingual publications; language of cataloguing; cross-linguistic subject searching.

## Universal Bibliographic Control

This international conference on *Bibliographic Control in the Digital Ecosystem* takes its context from the IFLA Professional Statement on Universal Bibliographic Control (UBC)<sup>1</sup> whose latest version was prepared by the IFLA Bibliography Section and endorsed in 2012.

In the original conception of UBC, first promoted in the 1970s (Anderson 1974), which was a very different technological context from today, the idea was for each national bibliographic agency (NBA) to create data for its own national publications once, while following standards to allow reuse of that data internationally. The idea was that by using the same form of access points, as established by the originating agency, it would be possible to exchange and integrate all the records into all the national catalogues. The focus was on efficiency and maximum sharing of effort.

However, global means multilingual. This concept of UBC did not take into account that users would have difficulty imagining the access points to use when these were devised in the language of cataloguing of the publishing country, not the user's preferred language, and that the number of different forms to search would increase depending on the origins of resources in the collection. As these access points can differ considerably, even without imagining the difficulties relating to different scripts, shifting this burden to the user is not compatible with our professional understanding of good service to the user. So in reality, NBAs could be informed by the work of their colleagues, but still needed to establish their own preferred forms and recatalogue resources to integrate them into their own catalogues. And this work falls less to NBAs than to their clients, libraries of all types around the world that collect materials published throughout the world.

And so the next conception of UBC, first proposed in the late 1990s, involved linking authority files contributed by different NBAs so that authority records describing the same entity but according to different choices of preferred language and script and different cataloguing conventions would be brought together via mapping (Tillett 2008). This is the thought that led to the Virtual International Authority File (VIAF) that we all know and use heavily (VIAF)<sup>2</sup>. And this is a powerful idea that translates nicely into the semantic web and linked open data (Willer and Dunsire 2013).

This still does not consider the display and retrieval of metadata, not only access points, from the user's point of view – a user who may be a multilingual.

## User Need for Multilingual Access

All human beings unavoidably work in language, think in language. Language has a very deep effect on all we do. Arguably, we can do little with library resources without language to mediate our access. Even resources with primarily visual or auditory (non-linguistic) content are mediated via metadata that includes language, and writing systems.

As has been described (Riva 2020, 137-138), there are several layers of multilingualism. Many user communities are multilingual, library collections are multilingual, and individual users have a continuum of language ability in multiple languages, which is reflected in the resources they want

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<sup>1</sup> <https://repository.ifla.org/handle/123456789/448>

<sup>2</sup> <http://viaf.org>

to access. Multilingual is a perspective that can apply both to individual users and to the user community of a library as a whole.

Note that a person does not have to be perfect in a language to use library resources in that language. In many cases one can use a resource even without being able to read absolutely all of it. For example, the resource may itself be multilingual (consider facing page translations, or the proceedings of multilingual conferences), or the resource may have minimal text, such as some art catalogues, or maps or image collections.

## Language of Cataloguing

A basic term in this discussion is *language of cataloguing*. It is a long-established term which seems to be considered obvious since it is never defined in the expected sources. It refers to the language used for all metadata, both descriptive and subject, that the cataloguer must provide in completing a resource description. This determines the linguistic suitability of the resulting record. A traditional assumption is that one catalogue will be built around one language of cataloguing.

RDA, Resource Description and Access<sup>3</sup>, comes the closest to defining the concept in the definition of the principle of “Common usage or practice” found in the section on “Objectives and Principles governing RDA”: “Data that are not transcribed from a manifestation that is being described should reflect common usage in the language and script chosen for recording the metadata.”

RDA goes on to state: “An agent who creates the metadata may prefer one or more languages and scripts.” RDA in its original formulation regularly, such as in instruction 0.11.2 *Language and Script*, used the carefully worded phrase “in a language and script preferred by the agency creating the data” [emphasis mine], not *the* preferred language of the agency, to explicitly allow for multilingual cataloguing agencies, but little is said about the practical consequences of having multiple preferred languages working together in a single catalogue. Common practices in this area have not yet emerged.

## Catalogue Configurations

Despite considering the question for several years, the exact meaning of a multilingual or bilingual catalogue is still imprecise. The catalogue we want depends on what we think our users will need. Are we serving a population that only uses one language and minimally is interested in others? Then a traditional catalogue with a focus on a single language is best suited. All resources, regardless of the languages of their content (and to the extent that resources in these other languages are even collected), are described and accessed via one language.

Or is one library serving distinct sub-populations each with its own language and likely to be interested in only its own materials? Then a solution similar to the Library and Archives Canada *Bilingual Cataloguing Policy* (LAC 2003)<sup>4</sup>, may suit. Under this policy, resources may be described once or twice, depending on the language of the content. Roughly speaking, French-language resources are described in French, English-language resources in English, and English-French bilin-

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<sup>3</sup> <https://access.rdatoolkit.org/>

<sup>4</sup> <https://www.bac-lac.gc.ca/eng/services/cataloguing-metadata/Pages/bilingual-cataloguing-policy.aspx>

gual resources in both languages, using two records. Although the available text of the policy is not yet updated since LAC's adoption of RDA, the determination for monographs of which treatment applies to a resource shows the details that must be considered in operationalizing this policy:

#### Monographs

1. All French-language publications (including multilingual publications containing a substantial portion of text in French) will be catalogued in French, according to the Règles de catalogage anglo-américaines, deuxième édition, révision de 1998 and its updates. Subject headings will be assigned in both French and English.
2. All publications in other languages (i.e. those containing no substantial portion of text in French) will be catalogued in English, according to the Anglo-American Cataloguing Rules, second edition, 2002 revision and its updates. Subject headings will be assigned in both English and French.
3. All bilingual and multilingual publications containing substantial portions of text in both English and French will be catalogued twice, once in English and once in French. English subject headings will be assigned to the English record; French subject headings will be assigned to the French record.
4. Texts in Latin and instructional materials will be catalogued according to the language of the intended audience (i.e. those intended for a French-speaking audience will be catalogued in French; those intended for an English-speaking or other language audience will be catalogued in English). Subject headings will be assigned according to the policy outlined above at 1-3.”

As a result, even if using the same catalogue, users interact primarily with metadata curated to be appropriate to the users' chosen language. However, it does create language silos, as users are guided to discovering only those resources in that language. This separation can be implemented using multiple catalogues, a solution that might make a lot of sense when the languages are in distinct writing systems. Scalability may become a concern under these approaches with the addition of more languages.

## Grounding in Local Context

For another population, with individuals actively using multiple languages, the goal is to allow users to search once in the language of their choice and retrieve relevant material regardless of the materials' language. This is the use case of interest for the partnership of Quebec university libraries. Canada is bilingual federally, but the official language of Quebec is French. Of the 18 universities in Quebec, 15 use French as a language of instruction, and three teach in English. All the libraries catalogue in the language of instruction of the respective university, but collect in both English and French (and in many other languages depending on the programs of instruction that are offered). The partnership's combined user population includes a whole spectrum of English-French speakers, including scholars with reading knowledge of languages, and many international students, immigrants and first-generation Canadians. Thus the partnership catalogue must bridge this language gap for the user, at least for English-French bilingualism. Bilingual services were a major element taken into consideration in the design of the Sofia<sup>5</sup> catalogues that were launched in summer 2020 following two years of preparation.

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<sup>5</sup> <https://sofia-biblios-uni-qc.org/fr/>

## User Display

Once the user has framed a search and retrieved records, the results need to be displayed to the user in a way consistent with the linguistic presentation of the interface. Is the content of the record adaptable to be appropriate to the user's language preference? One strategy to adapt the catalogue data is to store a single record and transform it so as to display according to the desired language. This seems like a natural extension of how the language of the user interface of a system, or of a website, can be switched between languages by a user. An easy part of the metadata to transform from one language to another is any value that is taken from a simple value vocabulary or controlled list. As long as display labels for those values exist in the user's desired language, the code can be displayed using its equivalent label in that language. Using codes is simple, cost-effective, and scalable (Aliverti 2019, 18). This is another point in favour of using controlled terms and established value vocabularies as much as possible, and it has the added benefit of being easier to adopt in a linked data context, using the mechanism of preferred labels with associated language attributes (Willer and Dunsire 2013, 182-192).

## Preferred Forms of Names and Role the Authority File

In addition to showing appropriate display labels for controlled terms and coded values, the forms of access points displayed to the user should be language-appropriate. This is necessary because language affects the choice of form of name in some cases: "Choose a well established name in a preferred language" is the usual phrase. This affects the choice of name for classical authors, for example of Plato (Platone, Platon, etc.), and also personal names that include cataloguer-supplied elements, such as Popes, Saints, Sovereigns, etc.

With corporate bodies, the choice of language of name affects the preferred access points for international bodies (United Nations vs Nations Unies, etc.). It also affects government subdivisions, since the name of the country will have an established form in the preferred language of the cataloguing agency, but usually the sub-body will only have an established name in the language of the country of the body. A typical example of the resulting bilingual construction is the English language form for the Italian meteorological service, established in the PCC-NACO authority file as:

110 1\_ |a Italy. |b Servizio meteorologico (n 2004021837)

An even more extreme example, for the office of the scientific attaché of the Italian Embassy in Belgium, in the form from the PCC-NACO authority file and suitable for an English-language agency, displays three languages. The name of the country, Italy, is in English, as is the qualifier for the country where the Embassy is found, Belgium. The term for an embassy is given in Italian, the language of the body, but the language of the specific office is in French, the language of the name of that body as used in Belgium.

110 1\_ |a Italy. |b Ambasciata (Belgium). |b Bureau de l'attaché scientifique (n 2004120329)

Displaying the language-appropriate forms of corporate bodies such as these examples, or other language-dependent names, requires maintaining equivalencies for each of the languages being supported. Creating a single authority file holding preferred forms in several languages within each record is the approach selected in several multilingual national libraries. Cohen describes the National Library of Israel's name authority file (Cohen 2020) which includes forms appropriate in English, Hebrew, Arabic and Russian, each in the relevant script. The Swiss Library (Lehtinen and Clavel-Merrin 1998) also describes an approach with multiple preferred forms stored in repeatable fields in a single authority record. As explained by Aliverti (Aliverti 2019, 22-24), a machine can only match a recorded name to a language if the language corresponding to the name is explicitly coded. In both these cases, the authority file is under the control of a single agency, and although multiple languages are used, there is a small, established list of the languages that are supported. Scaling these approaches to ever more languages would have significant costs.

By linking authority records contributed independently from different authority files with different languages of cataloguing, it should be possible for a system to look up an entity and retrieve an appropriate form in the desired language to display with the bibliographic metadata. Selecting linguistically appropriate display forms from sets of authority records for the same entity is the exact issue that VIAF was designed to solve. So far VIAF has remained a cataloguer's tool and is not yet implemented as widely as it could be in interfaces for end-users.

But there is more to the catalogue and its data than access points from the name authority file. This brings us to consider the languages used in the description.

## Multiple Shared Records

The approach of taking multiple records and linking them, instead of transforming a single record for display, can be applied to bibliographic records as well as to authority records. Then instead of manipulating the data elements within a single record, the whole record that corresponds to the user's desired language is selected for display. A single cataloguing agency applying stable cataloguing practices in its own catalogue can control the linkage between different language of cataloguing records for the same resource, thus ensuring equivalent service to each language group. On the other hand, sharing the work among different agencies, as in the Sofia catalogue, means pulling together metadata contributed by different agencies, each working independently in its own language of cataloguing. Then the question shifts to one of recognition that the different records describe the same resource. This recognition depends on standards and their consistent application in a shared environment, something libraries have considerable experience with, but the community working together must broaden in size to cover multiple languages.

How can that link be made? There is not yet a MARC 21 field that can serve to hard-link two descriptions for the same resource that are parallel language descriptions. Standard identifiers for the resource can be a start. Recording the identifiers is objective and should not be dependent on any of the cataloguing agencies involved. Also external to the metadata is any transcribed data from the resource itself, if selected and recorded consistently. And so these manifestation statements serve as an identifying element for the manifestation.

## Language in Description

Much of the descriptive metadata depends on the language of the resource, or at least the language of the resource's identifying information. This data is a surrogate for the resource and not to be transformed for display. All transcribed data – the manifestation statements – depends on the language used in the resource: title proper, statements of responsibility, edition, series. As do notes quoted from the resource. Although, in some cases this data does not reflect the language of the content, usually it does.

In contrast, there are a number of places in the descriptive portion of a record which depend on the language of cataloguing. Present in almost all descriptions:

- Cataloguer-supplied notes: since the cataloguer must compose them, this needs to be done in a language the cataloguer is competent to write in.
- Qualifiers: such as for ISBNs, other standard numbers.
- Prescribed terms: such as in physical description, there are many such terms, all over the description.

More infrequent situations:

- Supplied title proper: when there is no title proper and the cataloguer must devise a title, this is generally in the language of the catalogue.
- Choice of title page for multilingual publications: in certain contexts, the language of cataloguing plays a determining role.

## Examples of Standard Multilingual Publications

The choice of a source of information has considerable impact on the resulting description. Some multilingual publications also present parallel titles and other data in one or more sources.

A first case is illustrated by the Canadian Modern Languages Review = La revue canadienne des langues vivantes (figure 1). The source clearly presents two parallel titles. Bibliographic data is in both languages, but presented alternately on a single source. Following the normal left-to-right conventions, there is no doubt that the title to the left, the English title, should be transcribed first as the title proper. This decision is not dependent on the language of cataloguing. Since this is a journal, the content includes articles in one or the other of the languages, but only editorially supplied content is in both languages.

A slightly more complex case is presented by the proceedings of the IFLA International Meeting of Experts for an International Cataloguing Code 5 (figure 2). It has three parallel titles, in English, French and Portuguese, on the same source, which by convention the cataloguer will read from top to bottom, again resulting in the choice of the English parallel title as the title proper, regardless of language of cataloguing. Contributions are mainly translated into all three languages.

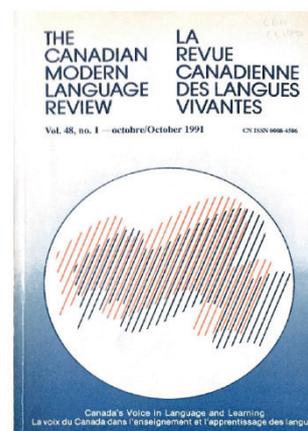


Fig. 1. Canadian Modern Languages Review

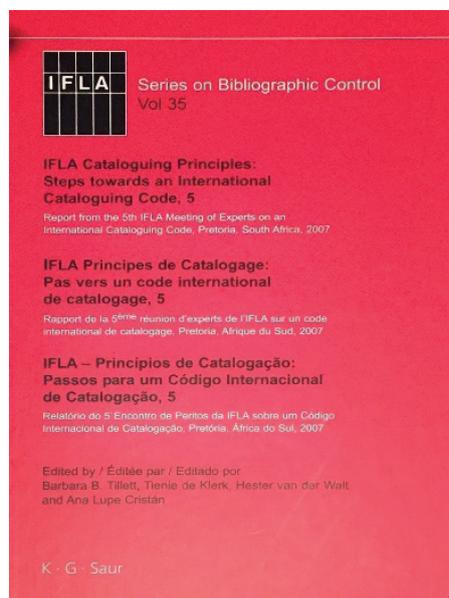


Fig. 2. IFLA Cataloguing Principles

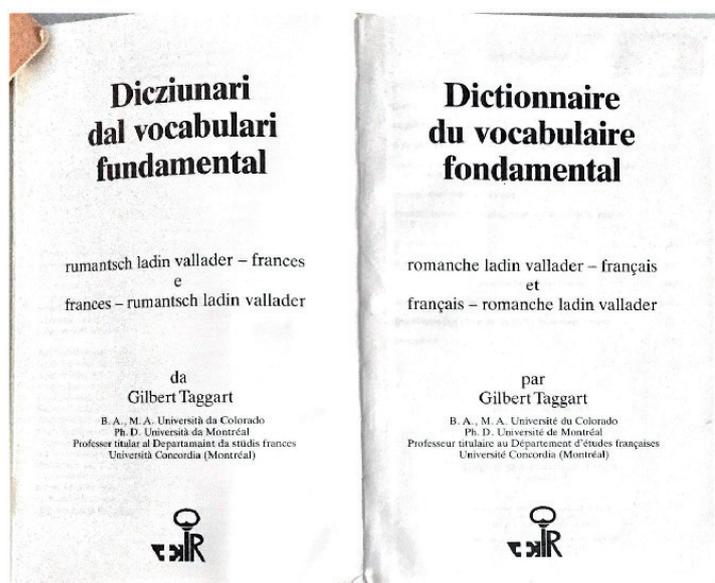


Fig. 3. Rumantsch-French bilingual dictionary

In this bilingual Rumantsch-French dictionary (figure 3) there are two full title pages. Applying the left-to-right convention again, this time to the choice of title page, the cataloguer is clearly directed to record the Rumantsch title first, as the title proper. The content of the dictionary alternates between the two languages.

In these three cases, since the same title proper will be chosen regardless of the language of cataloguing, the identification of the resource will be constant and there is a good chance that algorithms can match records catalogued in different languages as being for the same resource.

## Paradox of Tête-Bêche Publications

For one type of publication, the normally evident decision about source of information is anything but. Consider the tête-bêche publication layout. This is variously described as head-to-toe or text on inverted pages. It is usually used for relatively short technical or government reports for bilingual corporate bodies or jurisdictions. It is a very specialized publication format limited by its physical characteristics to two languages of text.

An example is Excursion B-19. The construction is best seen when the booklet is opened flat so that both covers can be seen at once (figure 4). The two covers both look like front covers, but presented on inverted pages. Text runs from each cover to meet in the middle. Opening the booklet from the English cover reveals the English title page (figure 5), while turning the booklet to open it from the French cover reveals the French title page (figure 6). There are two front covers and two title pages that are of exactly equal prominence. There is no physical distinction, or right way up! Each language is treated exactly equally. Is there any objective way one of these title pages can be said to be first? No! The choice of title page is arbitrary. With no characteristic inherent in the

publication to guide the cataloguer's choice, the criterion that remains is the language of cataloguing. For these publications, cataloguing conventions direct the cataloguer to choose the title page matching the language of cataloguing. Yet the publication can still be described as a whole, much as any facing-page translation or the bilingual dictionary with two adjacent title pages, by giving the title from the title page not chosen as a title from added title page.

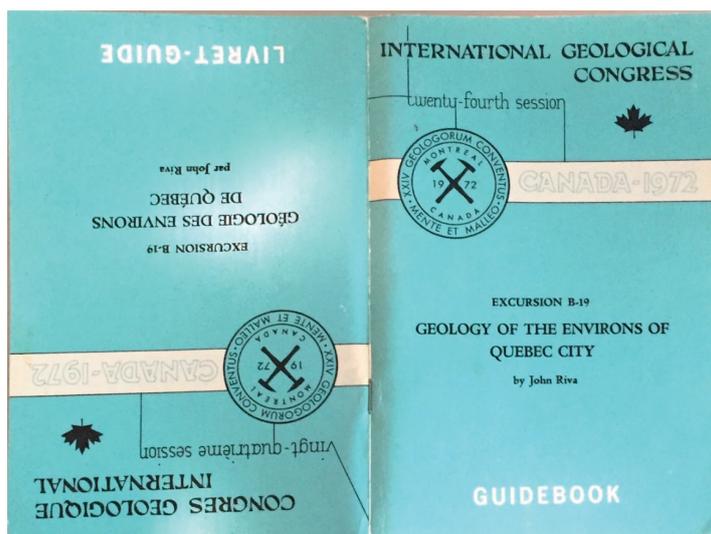


Fig. 4. Tête-bêche publication open to show both covers

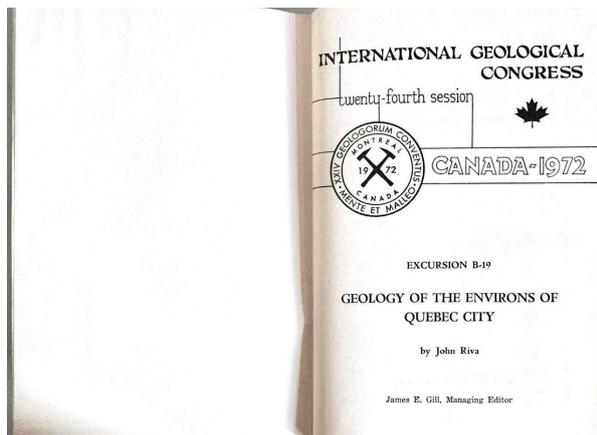


Fig. 5. English title page of tête-bêche publication

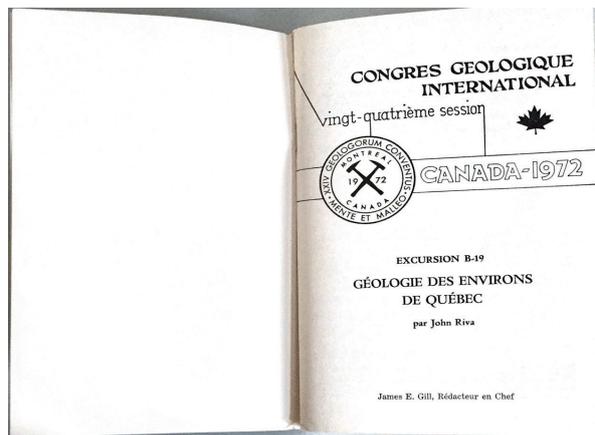


Fig. 6. French title page of tête-bêche publication

This results in two records that differ in many ways based on the language of cataloguing. Although the two records present the resource fully appropriately according to the language chosen for cataloguing, and serve users well, it seems unlikely that these record pairs can be machine-detected as being language of cataloguing variants for the same resource. The choice of title page has affected the choice of title proper, all other transcribed statements, pagination and probably many

other subtle details. Unless there is a standard number (note that Excursion B-19 does not have an ISBN), it would be difficult for an algorithm to match these parallel records, yet distinguish a tête-bêche publication from the entirely different case of two records in different languages of cataloguing that represent different language expressions that are not issued bound together. This is where a cataloguer-assigned link between records would be convenient, to allow overriding of the apparent differences.

Another particularity of the tête-bêche publication is what happens when it is digitized. The digitization has to start at one cover and linearly scan the document. Generally, the inversion is not preserved and the two expressions are scanned consecutively by returning to the other cover once the centre is reached. Because of the file layout, the choice of title page is forced according to whichever language is presented first in the file. In digital form, the choice of title proper is not dependent on language of cataloguing and the resource can be catalogued in the same manner as any bilingual publication presented sequentially. The cataloguing is much easier, but now a new difficulty arises. Matching the digital reproduction to the original, even when both records use the same language of cataloguing, needs to rely on a linking field.

## Topical Subjects and Classification

Strategies to provide subject access cross-linguistically have seen a lot of attention (Park 2007) and my aim here is not to provide a comprehensive review of that literature. Classification is enticing as a language switching hub, because the classification notations may appear to be language-neutral, but there are cultural expectations built-in to the design of classification, as basic as what topics go together, and which do not. Despite all this, a common classification can still be useful in facilitating multilingual rendering of resource metadata, by linking the classification notation to captions in different languages for display, as is done in the *Swiss Book*, the national bibliography of Switzerland, which uses captions for its Dewey Decimal Classification (DDC) subject categories in German, French, Italian, Rumantsch, and English (Aliverti 2019, 15-17).

Subject heading languages and thesauri also need to grapple with the issue that what is or is not viewed as being the same topic differs between language or cultural groups, even when the formal structures of the schemes are compatible. Linking pre-existing subject schemes devised according to different structures may best be described as a mapping process. When subject heading mappings have been carefully curated by bilingual cataloguers and the subject heading languages are compatible in structure, the results can be very good. One such project is the European project MACS which linked subject heading authority files in English, French, German, and Italian, where the high level of expertise of the participants avoided erroneous links that could have been caused by false cognates (Landry 2008, 219-220).

The French-language subject heading system used in Canada, the Répertoire de vedettes-matière de l'Université Laval (RVM), originated as a translation of the Library of Congress Subject Headings (LCSH) in 1946, and has retained its parallel structure. The RVM team has carefully maintained the mappings of the RVM headings to LCSH as both systems have evolved (Dolbec 2006; Holley 2002).

## Searching by Subject from the User's Point of View

In a catalogue promoted as bilingual, like Sofia, a user may enter a subject search in their dominant language, without considering that subject access for certain resources may only have been provided in one language and that retrieval using terms from only one language could be incomplete. To avoid putting the responsibility on the user to think of the equivalent terms in multiple languages, Sofia integrates some strategies for expansion of the user's search query with other language equivalents, the most powerful source of valid equivalents for French-English being the RVM authority file. In this file the LCSH equivalent headings are recorded in MARC 21 linking entry fields. This allows indexing English-French subject headings in both directions. Using an RVM authority record with fields 150 and 750 as shown below, a user's search query *Musées* can be looked up in the RVM authority file, linked to the LCSH form in the linking field, translated to *Museums* and the query can be expanded to search *Musées OR Museums*. Using exactly the same fields in the same RVM authority record, a user query for *Museums* can be looked up in the LCSH linking fields, matched to the RVM accepted form *Musées* found in the 150 field, and the user's search expanded to search *Museums OR Musées*.

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150    ___ |a Musées
750    _0 |a Museums
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If that fails, possibly the user's term does not match an accepted or variant form in the authority file, then a service like Google translate can be called to attempt to provide an equivalent term that can be used in an expanded search. This makes sense for topical subject searching, but not for names or titles, where the best equivalents are to be found in the name authority file.

A pitfall is when a single term in one subject heading language matches multiple terms in the other. This does happen because, as was noted, concepts do not always map cleanly between languages. For query expansion, the system can include all the terms found in the target language in the search. This ensures recall but possibly sacrifices some precision.

Expansion hinges on the accurate identification of the query language, which may not be easy, particularly since the language of the search query may not match the language of the user interface the user is currently working in. The user's search query may be too short to have the language identified, or the string may be ambiguous. For example, information is spelled the same in English and French, and the string "main" has a different meaning depending whether it is interpreted as French (hand) or English (the primary thing).

Expansion intervenes post-cataloguing at the point of the user's search. Another route is to ensure that subject headings in both languages are assigned to bibliographic records, so that all relevant resources will be retrieved whichever language the user searches with. When the records are supplied by different cataloguing agencies depending on the language of cataloguing, completing the subject heading assignment in the other language would require system assistance, either by enriching records in batch or by assisting the cataloguer in finding language-equivalent subjects. The advantage to adding only cataloguer-curated equivalents is mainly for those multiple equivalents. The cataloguer can pick only the one(s) that actually pertain to the resource. All these strategies can be combined and fine-tuned to balance recall with precision, within the practical constraints of cost and time available.

## Concluding Thoughts

In this highly incomplete reflection, I feel that I have presented more issues than answers. Pragmatic approaches that take cost-effectiveness and scalability into account are needed, and that draw the maximum benefit from existing data. A robust approach will need to combine several strategies, compensating for missing metadata by gracefully falling through to alternative mechanisms. There is still much to think about on the road to establishing some best practices for bilingual or multilingual catalogues. I consider that the goal is worth the attempt.

As a final perspective, remember Ranganathan's fourth law of library science: *Save the time of the user*. The system should be doing the work of retrieval, not the user. Even across multiple languages of cataloguing.

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