A Direct Bibliography Style for ᴀ̴rsTᴇXnica

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Abstract

We describe the `mlb-arstexnica` program, part of MlBibTₑX's new version, and suitable for generating bibliographies for ᴀ̴rsTᴇXnica articles. First, we recall the notion of *direct* bibliography style related to MlBibTₑX and mention the advantages of such a program. We show that our program provides additional services suitable for ᴀ̴rsTᴇXnica, compared to BibTₑX's bibliography style arstexnica.bst.

Keywords   BibTₑX, MlBibTₑX, LᴬTₑX, biblatex package, Unicode, interface with Scheme.

Sommario

Si descrive il programma mlb-arstexnica, parte della nuova versione di MlBibTₑX; esso è adatto per generare le bibliografie per gli articoli di ᴀ̴rsTᴇXnica. Si richiama la nozione di stile bibliografico *diretto* riferito a MlBibTₑX e si sottolineano i vantaggi di questo programma. Si mostra che questo programma fornisce ulteriori funzionalità adatte ad ᴀ̴rsTᴇXnica in confronto a quanto si può ottenere con lo stile bibliografico artexnica.bst da usare con BibTₑX.

Parole chiave   BibTₑX, MlBibTₑX, LᴬTₑX, biblatex, Unicode, interfaccia con Scheme.

1   Introduction

In some past GᴜIT conferences we have already introduced MlBibTₑX[1], our implementation of a 'better' BibTₑX (Patashnik, 1988b), the bibliography processor usually associated with LᴬTₑX. Let us recall that a *bibliography processor* builds 'References' section—as source texts—from *citation keys* and *bibliography database* files. See Mittelbach and Goossens (2004, §§ 12.1.3 & 13.2) about LᴬTₑX citation keys, extracted from *auxiliary* (.aux) files, and BibTₑX's format of database (.bib) files. The BibTₑX program is ageing, its bibliography styles are specified using an old-fashioned language based on handling a stack (Patashnik, 1988a). As mentioned in Mittelbach and Goossens (2004, § 13.6.3), introducing small changes within an existing style is quite easy, but designing new styles from scratch may be tedious. In addition, it hardly meets modern requirements such as dealing with formats extending the basic ᴀsᴄɪɪ[2] code, in particular, for-

mats related to Unicode (e.g., ᴜᴛꜰ-8[3]). Accented letters can be processed using TₑX commands, but accent commands are ignored by BibTₑX's sort procedure, so the lexical order provided by this program is only meaningful in English.

Nowadays more and more users typeset bibliographies for LᴬTₑX documents with the biblatex package (Lehman, 2018), associated with the biber bibliography processor (Kime and Charette, 2018). These two tools[4] allow end-users to get access to many interesting extensions: for example, the fields YEAR, MONTH and DAY[5] can be replaced by the DATE field, also usable for date *ranges*, e.g., 2019-08-31/2019-09-06. However the drawback of such extensions appears if users revert to 'old' BibTₑX, since its standard styles do not recognise these extensions[6]. Sometimes, users have to do that, for example, if they put research articles onto some Web sites controlling the process of publishing in conference proceedings[7]. As another example, the bibliography style arstexnica.bst, used for the articles of the homonymous journal, is unable to deal with the extensions introduced by the biblatex package.

One year ago, we studied this bibliography style in order to fix a bug and thought that reimplementing it as a *direct style* of MlBibTₑX could be useful for the ᴀ̴rsTᴇXnica board. In Section 2, we recall some general points about MlBibTₑX, in particular the notion of direct style. Section 3 is a short comparison between BibTₑX and MlBibTₑX. The look of our proposed command is described in Section 4. Reading this article only requires basic knowledge of LᴬTₑX and BibTₑX.

2   MlBibTₑX's Outlines

When we started MlBibTₑX's development, we were mainly interested in multilingual aspects (Hufflen, 2005). Then we proposed some syntactical extensions in order to ease the specification of authors' and editors' names (Hufflen, 2006), we went thoroughly into some points re-

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1. **M**ulti**L**ingual BibTₑX.
2. **A**merican **S**tandard **C**ode for **I**nformation **I**nterchange.

3. **U**nicode **T**ransformation **F**ormat.
4. There are some descriptions of these tools in Italian: Pantieri (2009) for an introduction and Valbusa (2014) about advanced features.
5. This last field does not belong to BibTₑX standard, even if some styles use it.
6. For example, the YEAR field is required if you use 'old' BibTₑX and would like your bibliographies to be sorted; it cannot be replaced by the DATE field.
7. The most famous site for Computer Science conferences is indisputably http://www.easychair.org.

```
%encoding = utf8

@BOOK{cussler2010,
      AUTHOR = {Clive Eric Cussler,
                abbr => Cl. with
                first => Jack,
                last => Du Brul},
      TITLE = {The Silent Sea},
      PUBLISHER = {Penguin Books},
      YEAR = 2010,
      LANGUAGE = english}

@BOOK{deturris1991,
      AUTHOR = {first => Gianfranco,
                last => De Turris},
      TITLE = {Il disagio della realtà},
      PUBLISHER = {Edizioni Settimo Sigillo},
      ADDRESS = {Roma},
      YEAR = 1991,
      LANGUAGE = italian}
```

FIGURE 1: Some syntactical extensions of MlBibTEX.

lated to programming, e.g., the definition of chaining ambitious language-dependent order relations (HUFFLEN, 2007) and enlarged expressive power by introducing *inexact* information about ancient documents (HUFFLEN, 2014). Since the first public version (HUFFLEN, 2003), MlBibTEX—written in Scheme—has been able to apply BibTEX bibliography styles or styles written using an extension of XSLT[8] (W3C, 1999), the language used for transformations of XML[9] texts[10]. Then some existing styles have been wholly rewritten in Scheme, some new ones have been wholly designed in Scheme, too. Such styles—which are very efficient—are so-called *direct* with respect to MlBibTEX's terminology.

A new version, announced in HUFFLEN (2015), deals with Unicode and allows .bib files to use various encodings. If *several* .bib files are to be searched for document citation keys, *each* .bib file can use its own encoding. The program tries to guess the encoding used within such a file, but it is recommended to write this information down as we do in Fig. 1. The default encoding for input and output files is Latin 1, but can be changed within your initialisation files by means of the interface with Scheme. Fig. 1 shows some syntactical extensions provided by MlBibTEX.

Last but not least, let us recall that when MlBibTEX processes an .aux file, it also reads the preamble of the corresponding source .tex document[11]. What is important for our purposes is that MlBibTEX can detect the inputenc package option (MITTELBACH and GOOSSENS, 2004, § 7.1.2), that

is, the encoding to be used for the output file containing generated references.

3 MlBibTEX vs BibTEX

If we consider some standard uses of bibliographical entries, the main difference between MlBibTEX and BibTEX is that the former is less permissive than the latter. Since its first version, MlBibTEX has performed more checks than 'old' BibTEX, and designing direct styles in Scheme allowed us to go on in this direction. For example, all the fields associated with a date must be well-formed: the YEAR field must be a non-zero integer[12], the MONTH field must be a mnemonic among jan, feb, ..., dec. Likewise, the taxonomy of the values associated with the DATE field is checked. Some conventions about dates may appear as too drastic, but they insure that our chronological sort procedures work properly. Here are the other fields subject to a more advanced check than in BibTEX and usable in ArsTEXnica style:

- for *person names*, e.g., AUTHOR and EDITOR;

- for language names: LANGUAGE;

- for URLs[13].

When a field name is unrecognised, a warning message is emitted: often this convention allows end-users to fix typing mistakes in practice. Here are the additional conventions when fields introduced by the biblatex package are used within bibliographical entries of .bib files but unrecognised within 'standard' bibliography styles:

- if the DATE field is used:
  - if it is associated with a single date, it is expanded using the fields YEAR, MONTH and DAY,
  - if it is associated with a range, the second date (the range's upper bound) is dropped out and the previous rules applies;

- to sort bibliographies, the fields SORTYEAR and SORTTITLE—when given—are used instead of YEAR and TITLE.

4 The mlb-arstexnica Program

There are two ways to process ArsTEXnica bibliographies with MlBibTEX:

- run the mlbibtex executable program and use the bibliography style arstexnica.bst;

- run the direct style mlb-arstexnica.

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8. e**X**tensible **S**tylesheet **L**anguage **T**ransformations.

9. e**X**tensible **M**arkup **L**anguage.

10. Parsing .bib files results in Scheme structures that may be viewed as XML trees, using an open format.

11. On the contrary, 'old' BibTEX *never* reads .tex files, it only processes .aux files.

12. ... unless the -inexact option is used, in which case some digits may be replaced by '?'. See HUFFLEN (2014) for more details.

13. **U**niform **R**esource **L**ocator.

The first way is still based on the .bst file, which may be viewed as more readable than a Scheme program. The second way results in a more efficient process and may get access to some operations unreachable by a .bst program: for example, using advanced or language-dependent order relations to sort bibliographies. The mlb-arstexnica executable file is added to the programs announced in HUFFLEN (2015, § 4). Its command line is:

```
mlb-arstexnica [option]* filename
```

filename being an .aux file; you can put the suffix or leave it implicit. Possible options are:

-h or -help displays help messages and exits;

-inexact allows *inexact* information to be accepted and processed: see Footnote 12, p. 2 and HUFFLEN (2014);

-min-crossrefs=*n* has the same effect than in BIBTEX: entries accessed at least *n* times (*n* is a natural number) by means of a CROSSREF field are put; see MITTELBACH and GOOSSENS (2004, § 13.2.5) for more details;

-tex-file=... allows end-users to make precise the source LATEX file associated with the .aux file, when it cannot be easily deduced[14].

At the time of writing, MlBIBTEX and its derived programs can run on Linux and Mac OS X; they should be able to run on Windows. We are in contact with the CTAN[15] in order to put our files onto this site. As most files available within a TEX distribution, our source files are subject to the LPPL[16].

5   Conclusion

We think that our mlb-arstexnica program can provide many additional services compared to the present style of BIBTEX. We hope that end-users will play with it with as much pleasure as ours developping it.

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14. Let us recall that MlBIBTEX reads the source LATEX file's preamble (cf. § 2).
15. **C**omprehensive TEX **A**rchive **N**etwork.
16. LATEX **P**roject **P**ublic **L**icense. For more details, see https://www.latex-project.org/lppl.txt.

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