

Everything
you always wanted to know
about BiB_TE_X



Everything
you always wanted to know
about BiB \TeX



But were afraid to ask

Piet van Oostrum

Nov 13, 2003

Contents

- ▶ Use of BiB $\text{T}_\text{E}\text{X}$
- ▶ The bibliography file
- ▶ BiB $\text{T}_\text{E}\text{X}$ styles
- ▶ Customizing
- ▶ Multiple bibliographies
- ▶ Glossaries with BiB $\text{T}_\text{E}\text{X}$

Example 1

```
\documentclass{article}
\begin{document}
As has been shown in \cite{swierstra01combinator} \ldots
\nocite{el_libro_latex}
\bibliographystyle{plain}
\bibliography{bibfile}
\end{document}
```

- ▶ `\cite{key}`
- ▶ `\nocite{key|*}`
- ▶ `\bibliographystyle{style}`
- ▶ `\bibliography{bibfile(s)}`

Example 1 output

As has been shown in [2] ...

References

- [1] Bernardo Cascales Salinas, Pascual Lucas Saorín, José Manuel Mira Ros, Antonio José Pallarés Ruiz, and Salvador Sánchez-Pedreño Guillén. *El Libro De L^AT_EX*. Pearson, 2003.
- [2] Doaitse Swierstra. Combinator parsers: From toys to tools. In Graham Hutton, editor, *Electronic Notes in Theoretical Computer Science*, volume 41. Elsevier Science Publishers, 2001.

- ‘El Libro de L^AT_EX’ is with capitals
- ‘Combinator parsers: From toys to tools’ is with minuscules (except after the :)
- The capitals are in the bibfile
- The lowercasing is done by the bibstyle

Example 2

```
\documentclass[openbib]{article}
\begin{document}
As has been shown in \cite{swierstra01combinator} \ldots
\nocite{el_libro_latex}
\bibliographystyle{alpha}
\bibliography{bibfile}
\end{document}
```

- openbib document option
- Bibliographystyle alpha
- ▶ Other standard bibstyles: unsrt, abbrv
- ▶ More styles later ...

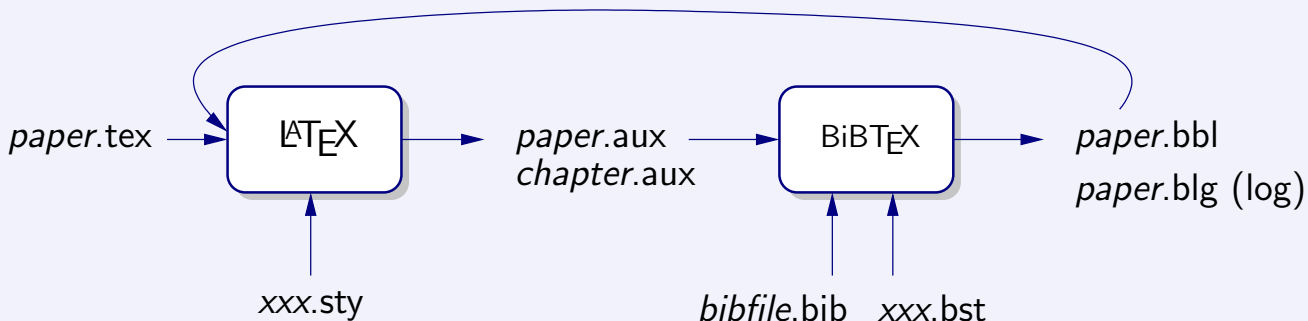
Example 2 output

As has been shown in [Swi01] ...

References

- [CSLSMR⁺03] Bernardo Cascales Salinas, Pascual Lucas Saorín, José Manuel Mira Ros, Antonio José Pallarés Ruiz, and Salvador Sánchez-Pedreño Guillén.
El Libro de L^AT_EX.
Pearson, 2003.
- [Swi01] Doaitse Swierstra.
Combinator parsers: From toys to tools.
In Graham Hutton, editor, *Electronic Notes in Theoretical Computer Science*, volume 41. Elsevier Science Publishers, 2001.

BiBTeX process



- `latex paper` \longrightarrow `paper.aux`
- `bibtex paper` \longrightarrow `paper.bbl`
- `[pdf]latex paper` \longrightarrow `paper.dvi/pdf`
- sometimes additional `latex` runs necessary

Example .bbl file

```
\begin{thebibliography}{1}

\bibitem{el_libro_latex}
Bernardo Cascales~Salinas, Pascual Lucas~Saor\'in, Jos\'e~Man
Antonio~Jos\'e Pallar\'es~Ruiz, and Salvador S\'anchez-Pedr
\newblock {\em El Libro de \LaTeX}.
\newblock Pearson, 2003.

\bibitem{swierstra01combinator}
Doaitse Swierstra.
\newblock Combinator parsers: From toys to tools.
\newblock In Graham Hutton, editor, {\em Electronic Notes in
Computer Science}, volume~41. Elsevier Science Publishers,

\end{thebibliography}
```

`\newblock` creates a newline with the `openbib` document option.

The .bib file

```
@inproceedings{ swierstra01combinator,  
  author = "Doaitse Swierstra",  
  title = {Combinator Parsers: From Toys to Tools},  
  booktitle = "Electronic Notes in Theoretical Computer  
              Science",  
  volume = 41,  
  issue = "1",  
  publisher = "Elsevier Science Publishers",  
  editor = "Graham Hutton",  
  year = "2001",  
  url = "http://math.tulane.edu/~entcs/"  
}
```

- ▶ **Entries** like @book, @article, @inproceedings
- ▶ Entries contain **fields**, like author, title

Bibfile entries

- @Article
- @Book
- @Booklet
- @InBook
- @InCollection
- @InProceedings
- @Manual
- @MastersThesis
- @Misc
- @PhdThesis
- @Proceedings
- @TechReport
- @Unpublished

Unlimited, depends on the bibstyle. (Case is not important)

Special entries:

- @Preamble
- @String
- @Comment

Field values

- ▶ Quoted strings with balanced { }.
 - `publisher = "Elsevier Science Publishers"`
 - The outer quotes are removed
- ▶ Braced strings with balanced { }.
 - `title = {Combinator Parsers: From Toys to Tools}`
 - The outer braces are removed
- ▶ Unsigned Numbers
 - `year = 2003`
- ▶ Macros
 - `month = jan`
 - Macros are defined with `@string` or by the `bibstyle`
 - `@string(jan = "Januari")`
 - `@string{acmtr = "ACM Transactions on "}`
- ▶ The above items concatenated with #
 - `journal = acmtr # "Multimedia"`

People's Names

- ▶ Names (like in author, editor) contains 4 parts:
First name(s), 'von', 'Last Name(s), Junior
- ▶ E.g. Piet van Oostrum, Sr.
- ▶ There is no support for titles like Prof., Lord
- ▶ The 'von' part is in lowercase
- ▶ There are three supported formats:
 - First von Last
 - von Last, First
 - von Last, Jr, First
- ▶ Multiple names are separated by and, **not by commas**
- ▶ Accented letters should be put in { } (also in other fields)

Example

```
author =      {Cascales Salinas, Bernardo and  
              Lucas Saor{\`i}n, Pascual and  
              Mira Ros, Jos{\`e} Manuel and  
              Pallar{\`e}s Ruiz, Antonio Jos{\`e} and  
              S{\`a}nchez-Pedre{\~n}o Guill{\`e}n,  
              Salvador},
```

- ▶ Normally full first names should be entered, abbreviation is BiBTeX's business
- ▶ Compound last names can be given as
 - Cascales Salinas, Bernardo
 - Bernardo {Cascales Salinas}
 - otherwise 'Cascades' is taken as first name
 - 'van Emde Boas' poses no problems

Example with abbrv output

Use abbrv bibstyle

As has been shown in [2] ...

References

- [1] B. Cascales Salinas, P. Lucas Saorín, J. M. Mira Ros, A. J. Pallarés Ruiz, and S. Sánchez-Pedreño Guillén. *El Libro de L^AT_EX*. Pearson, 2003.
- [2] D. Swierstra. Combinator parsers: From toys to tools. In G. Hutton, editor, *Electronic Notes in Theoretical Computer Science*, volume 41. Elsevier Science Publishers, 2001.

Hyphenated names like Jean-Paul will be abbreviated as J.-P.

Difficult cases

- ▶ 'Von' parts with capitals:
 - e.g. Juan De La Torre
 - Use a \LaTeX macro trick:
Juan `{\MakeUppercase{d}e La}` Torre
 - Bi \TeX will see the lowercase 'd' and take the whole brace group as 'von'

Difficult cases

- ▶ ‘Von’ parts with capitals:
 - e.g. Juan De La Torre
 - Use a \LaTeX macro trick:
Juan `{\MakeUppercase{d}e La}` Torre
 - $\text{Bi}\TeX$ will see the lowercase ‘d’ and take the whole brace group as ‘von’
- ▶ Accented letters in names
 - Put them in a (first level) brace group
 - $\text{Bi}\TeX$ will recognize standard \LaTeX macros like `\oe`, `\i`
 - The letter after the accent will be used for sorting:
author = "Kre`\v{s}`imir `{\v{Z}}`igi`\'`{c}"
 - macros at top level can be dangerous, $\text{Bi}\TeX$ may change e.g. `\TeX` to `\tex`
 - $\text{Bi}\TeX$ uses special processing for first-level brace groups that contain `\` as the first character
 - Other brace groups are not changed

Lords

Lord Kelvin can be solved in different ways

- ▶ `author = "Lord Kelvin"` will abbreviate Lord to L. in an abbrev style (Lord is considered first name)

Lords

Lord Kelvin can be solved in different ways

- ▶ `author = "Lord Kelvin"` will abbreviate Lord to L. in an abbrev style (Lord is considered first name)
- ▶ `author = "{Lord} Kelvin"` still considers Lord to be first name but will not abbreviate (and sort on K)

Lords

Lord Kelvin can be solved in different ways

- ▶ `author = "Lord Kelvin"` will abbreviate Lord to L. in an abbrev style (Lord is considered first name)
- ▶ `author = "{Lord} Kelvin"` still considers Lord to be first name but will not abbreviate (and sort on K)
- ▶ Macro trick:

```
@preamble{"\newcommand{\noopsort}[1]{}"  
@book{...  
  author = "\noopsort{Kelvin}Lord Kelvin"
```

- ▶ De `\noopsort{Kelvin}` will not generate output, but the sort key will be 'KelvinLord Kelvin'

Lords

- ▶ Another macro trick:

```
@preamble{"\newcommand{\Lord}[1]{Lord #1}"  
@book{...  
  author = "{\Lord{Kelvin}}"  
  ...  
}
```

- ▶ The sort key is 'Lord'
- ▶ Beware of case changes when using \Lord on the top-level

Titles

- ▶ Titles follow a similar logic
- ▶ Accented letters should be put in first level brace groups
- ▶ The bibstyle determines capitalization
- ▶ You can overrule it by using brace groups, e.g. {IBM}

Bibliography styles

- ▶ There are many different bibliography styles:
 - `agsm.bst`: Australian Government Style manual
 - `chicago.bst`: Chicago Manual of Style (uses `chicago.sty`)
 - `apalike.bst`: American Psychology Association (uses `apalike.sty`)
 - `kluwer.bst`: Kluwer (uses `harvard.sty`)
 - `nederlands.bst`: Sorts on last name, not 'von'
 - `cite.sty`: is not a bibstyle, but can sort and compress numerical references, e.g. `[1, 3, 2, 6] ⇒ [1–3, 6]`

Customizing

If you want to customize the bibliography there are three options:

- ▶ Use a style that can be parameterized, or has sufficient possibilities
- ▶ Use the custom-bib package
- ▶ Write (or modify) your own .bst file

All round styles

- ▶ `natbib` is a \LaTeX package (`.sty` file)
- ▶ Can be used with different bibstyles (`harvard`, `apalike`, `chicago`, `agsm`, ...)
- ▶ Basically supercedes many of these
- ▶ It uses an 'author, year' style of citation by default
- ▶ For compatibility there are `plainnat`, `abbrvnat`, `unsrtnat` bibstyles

Natbib example

```
\documentclass{article}
\usepackage{natbib}

\begin{document}
As has been shown by \citet{swierstra01combinator} \ldots\
As we have seen \citep[chapter~2]{el_libro_latex}\
All the authors \citep*{el_libro_latex}
\bibliographystyle{newapa}
\bibliography{bibfile}
\end{document}
```

- ▶ natbib package
- ▶ newapa bibstyle used

Natbib example

```
As has been shown by \citet{swierstra01combinator} \ldots\\
As we have seen \citep[chapter~2]{el_libro_latex}\\
All the authors \citep*{el_libro_latex}
```

► Different cite commands

- `\citet` textual
- `\citep` parenthesized
- authorlist abbreviated
- with `*` the full author list is given (if the bibstyle supports it)
- optional parameter
- there are many other cite command, e.g for author, for year, without parentheses
- In the bibliography there are no keys

As has been shown by Swierstra (2001) ...

As we have seen (Cascales Salinas et al., 2003, chapter 2)

All the authors (Cascales Salinas, Lucas Saorín, Mira Ros, Pallarés Ruiz and Sánchez-Pedreño Guillén, 2003)

References

Cascales Salinas, B., Lucas Saorín, P., Mira Ros, J. M., Pallarés Ruiz, A. J., and Sánchez-Pedreño Guillén, S. (2003). *El Libro de L^AT_EX*. Pearson.

Swierstra, D. (2001). Combinator parsers: From toys to tools. In Hutton, G. (Ed.), *Electronic Notes in Theoretical Computer Science*, volume 41. Elsevier Science Publishers.

More natbib variations

- ▶ customizing the parentheses and punctuation:
`\bibpunct{[]}{/}{a}{,}{;}`
- ▶ Capitalization of 'von'
- ▶ citation aliasing
- ▶ with the options `numbers,sort&compress` the same as `cite.sty` can be achieved
- ▶ Moreover with the `hyperref` and `hypernat` package you get hyperlinks (which `cite` doesn't)
- ▶ much more ...

Example 5

```
\documentclass{article}
\usepackage{natbib}
\bibpunct{[]{}{/}{a}{,}

\begin{document}
As has been shown by \citet{Dat95,Del95}, \ldots\
Also \cite{swierstra01combinator} \ldots\
\Citet{helm98} has shown that \ldots
\bibliographystyle{apalike}
\bibliography{bibfile}
\end{document}
```

Example 5 output

As has been shown by Date [1995]/ Delobel et al. [1995], ...
Also Swierstra [2001] ...
Van der Helm [1998] has shown that ...

References

Date, C. J. (1995). *An Introduction to Database Systems*, volume I. Addison-Wesley Publishing Company Inc., Reading, Massachusetts, 6 edition.

Delobel, C., Lécluse, C., and Richard, P. (1995). *Databases: From Relational to Object-Oriented Systems*. International Thomson Publishing, London.

Swierstra, D. (2001). Combinator parsers: From toys to tools. In Hutton, G., editor, *Electronic Notes in Theoretical Computer Science*, volume 41. Elsevier Science Publishers.

van der Helm, F. C. (1998). *Test bibstyle*. IK.

- However, 'van der Helm' is sorted at 'v'.
- Later ...

Jurabib

- ▶ Jurabib is for citing 'legal/humanities style'
- ▶ optional second argument (editors)
- ▶ footnote style referencing
- ▶ jurabib has too many options, styles and formats to give them all

Jurabib example

```
\documentclass{article}
\usepackage{jurabib}

\begin{document}
As has been shown by \cite{swierstra01combinator} \ldots\
As we have seen \footcite[chapter~2]{el_libro_latex}\
This is a full cite: \fullcite{el_libro_latex}
\bibliographystyle{jurabib}
\bibliography{bibfile}
\end{document}
```

- ▶ Two variations used:
- ▶ `\footcite`
- ▶ `\fullcite`

Jurabib output

As has been shown by Swierstra ...

As we have seen¹

This is a full cite: Cascales Salinas, Bernardo et al. *El Libro de L^AT_EX*. Pearson, 2003

References

Cascales Salinas, Bernardo et al.: *El Libro de L^AT_EX*. Pearson, 2003

Swierstra, Doaitse: *Combinator Parsers: From Toys to Tools*. In **Hutton, Graham, editor:** *Electronic Notes in Theoretical Computer Science*. Volume 41, Elsevier Science Publishers, 2001 (URL: <http://math.tulane.edu/~entcs/>)

¹Cascales Salinas et al. chapter 2.

Making your own bibstyle

▶ Custom-bib

- Make your own .bst file by answering a lot of questions
- It has some 32 questions with an average of 7 answers per question
- Thus it can produce some 30 billion different bst files.
- There are also predefined language profiles

Making your own bibstyle

ORDERING OF REFERENCES (if author-year citations)

(*) Alphabetical by all authors

(l) By label (Jones before Jones and James before Jones et al)

(k) By label and cite key instead of label and title, as above

(d) Year ordered and then by authors (for publication lists)

(r) Reverse year ordered and then by authors (most recent first)

(c) Citation order (unsorted, only meaningful for numericals)

Select:

```
\ans=d
```

You have selected: Year ordered

ORDER ON VON PART (if not citation order)

(*) Sort on von part (de la Maire before Defoe)

(x) Sort without von part (de la Maire after Mahone)

Select:

```
\ans=x
```

You have selected: Sort without von part

Bibstyle like agsm with Dutch sorting

```
\documentclass{article}
\usepackage{natbib}

\begin{document}
As has been shown by \citet{Dat95,Del195}, \ldots\
Also \cite{swierstra01combinator} \ldots\
\Citet{helm98} has shown that \ldots
\bibliographystyle{agsmnl}
\bibliography{bibfile}
\end{document}
```

As has been shown by Date (1995); Delobel et al. (1995), ...
Also Swierstra (2001) ...
Van der Helm (1998) has shown that ...

References

Date C.J. (1995), *An Introduction to Database Systems*, vol. I, Addison-Wesley Publishing Company Inc., Reading, Massachusetts, 6 edn.

Delobel C., Lécluse C. & Richard P. (1995), *Databases: From Relational to Object-Oriented Systems*, International Thomson Publishing, Londen.

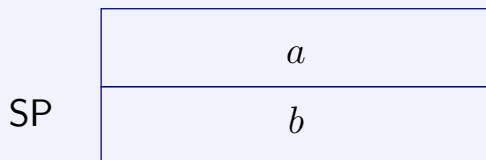
van der Helm F.C. (1998), *Test bibstyle*, IK.

Swierstra D. (2001), Combinator parsers: From toys to tools, in G. Hutton, ed., *Electronic Notes in Theoretical Computer Science*, Elsevier Science Publishers, vol. 41.

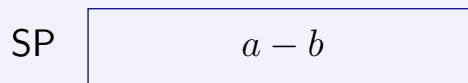
URL <http://math.tulane.edu/~entcs/>

BST hacking

BiB_TE_X uses a stack machine:



Before the operation



After the operation

Several built-in operations:

```
title  
"t"  
change.case$
```

`change.case$` changes the case of the first parameter according to the spec (second parameter): “t” = title case (Capitalize Words), “l” = make lowercase, “u” = make uppercase.

BST hacking

```
name1  
name2  
...  
namei  
i  
format  
format.name$
```

format names according to the format

format contains spec how to treat the four name parts:

E.g.

```
"{vv~}{ll}{, jj}{, f}"
```

Doubled letters take the full value, single ones abbreviate

Names are formatted for output and for sort keys.

Multiple bibliographies

Packages:

- ▶ `chapterbib`
Bibliography per chapter
- ▶ `bibunits`
Bibliography per unit (chapter, section)
- ▶ `multibib`
Multiple bibliographies (different subjects)
Incompatible with `jurabib`'s `\footcite`
- ▶ `bibtopic`
Different bibliographies for different topics
Separate `.bib` files for each topic

Glossaries with BiBTeX

- ▶ Glossaries usually done with `makeindex`
- ▶ However no 'database'
- ▶ With BiBTeX a common database can be used
- ▶ `gloss.sty` can be used
- ▶ Creates `paper.tex.gls.aux` and `paper.tex.gls.bbl`

Glossary example

```
\usepackage{gloss}
\makegloss
...
\gloss[options]{key}
...
\printgloss{database}
```

Database:

```
@GD{ key,
  word      = "glossary",
  definition = {A list of definitions of terms}
}
```